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Evaluation of Clinical Competence with Physical Therapy Students

University — Université

University of Alberta

Degree for which thesis was presented — Grade pour lequel cette thèse fut présentée

M Ed

Year this degree conferred — Année d'obtention de ce grade	Name of Supervisor — Nom du directeur de thèse
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EVALUATION OF CLINICAL COMPETENCE WITH PHYSICAL THERAPY STUDENTS

by

© JOAN ELIZABETH LOOMIS

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

Fall, 1983

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Supervisor

Date: September 20, 1983

DEDICATION

To my parents, husband and son

ABSTRACT

This present study was designed to develop an evaluation of clinical competence with physical therapy (PT) students and to establish its reliability and validity. The study of clinical competence in PT has focused primarily on defining the knowledge, skills, judgements and attitudes that must be acquired by PT students for satisfactory performance upon entering professional practice. Concomitant with the emphasis on defining clinical competence is the need for salient evaluation and diagnosis of clinical competence in PT education.

A criterion-reference evaluation instrument, Evaluation of Clinical Competence (ECC), was developed by following the procedures as outlined. (1) Clinical competencies required for PT practice were identified by a survey of the PT literature and professional documents and, then, were validated by a questionnaire completed by 121 physical therapists working in Edmonton. The questionnaire results also provided a basis for determining the standards of performance by which to assess these competencies. (2) The instrument was designed as a behaviorally-anchored rating scale to determine if a PT student can perform clinical competencies necessary for entering the profession as judged by four standards of performance. (3) This 4-point rating scale was tested on the two groups of PT students from the University of Alberta. The ECC was administered to fourth year PT students ($\underline{n}$=29) during their clinical placement in November 1982 according to the specified instructions in order to obtain data by which to analyze and revise the ECC. The revised ECC was administered to third year students ($\underline{n}$=23) and fourth year PT students (n=25) during their

clinical placements in February and March 1983. The same instructions were followed in order to collect data necessary to establish inter-rater reliability, concurrent validity and construct validity of the ECC.

The results of the study suggest that the ECC is a fairly reliable, valid and practical instrument to assess clinical competence of PT students. The inter-rater reliability of the ECC was .591 and .624 with fourth year and third year PT students respectively, which surpassed the reliability of similar clinical evaluations in medicine and PT. The ECC discriminated better between incompetent and competent levels of performance than between competent and highly competent levels of performance. The concurrent validity coefficients of the ECC with a rating of potential employability were .597 and .655 for the two preceptors assigned to evaluate each student. Construct validity was supported by a significant difference between the means of the total ECC scores awarded to experienced fourth year students and novice third year students [$F\ (1,97) = 26.06,\ p \leq .001$). Furthermore, this study has contributed to the definition of the construct of clinical competence and outlined the process involved in developing a clinical evaluation instrument.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to:

Dr. T.O. Maguire, my advisor, who provided much help and guidance through the study;

My committee members, Dr. D. Magee and Dr. F. Boersma, for their willingness to assist me in this study;

My husband, Jonathan, whose support and understanding helped me achieve this goal; and finally

The Canadian Physiotherapy Association Research Fund and the Edmonton District of the Canadian Physiotherapy Association Research Fund for the grants to conduct this study.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Background to the Problem	1
	Statement of the Problem	2
	Objectives of the Study	3
	Research Questions	4
	Signficance of the Study	4
	Delimitations	7
	Limitations	8
	Terms and Definitions	9
II.	SURVEY OF THE LITERATURE	11
	Methods Used in Evaluating Clinical Competence	11
	Observational Evaluations	13
	Errors in Observational Evaluations	15
	Methods to Improve Reliability of Rating Scales	17
	Well-defined Competencies and Performance Criteria	18
	Number of Scale Points	22
	Multiple Observations	23
	Methods to Improve Validity of Rating Scales	24
	Development and Validation of Physical Therapy Competencies	26
	Physical Therapy Rating Scales	30
	Conclusion	34
III.	METHOD	36
	Instrument Development Phase	36

CHAPTER PAGE

Identification of Competencies 36

Questionnaire 37

Construction of the Instrument 38

Instructions to Administer the Instrument 41

Instructions for Daily Ratings: Section I 42

Instructions for Final Ratings: Section I 43

Instructions for Final Ratings: Section II 43

Instrument Validation Phase 44

Informed Consent 44

Pilot Testing of the Evaluation of Clinical Competence 45

Validation Studies of the Evaluation of Clinical Competence 45

Administration Procedues 46

Evaluation and Revision of the Instrument 47

Validation of the Revised Instrument 47

IV. RESULTS 50

Instrument Development Phase 50

Instrument Validation Phase 54

Evaluation of the Instrument 54

Validation of the Revised Instrument 63

Fourth Year Physical Therapy Students 63

Validation of the Revised Instrument 75

Third Year Physical Therapy Students 75

V. DISCUSSION 85

Instrument Development Phase 85

Instrument Validation Phase 88

CHAPTER PAGE

Evaluation of the Instrument 88

Validation of the Revised Instrument 90

Reliability of the Individual Items 90

Reliability of the Entire Instrument 93

Validity 94

Usability 95

VI. CONCLUSIONS AND RECOMMENDATIONS 97

Recommendations 98

REFERENCES 100

APPENDICES:

APPENDIX A: Competencies to be Achieved by Physical Therapy Students Upon Completion of Their Clinical Education Program 107

APPENDIX B: Questionnaire to Rate Importance of Competencies in Physical Therapy and Accompanying Letter 116

APPENDIX C: Evaluation of Clinical Competence Form 123

APPENDIX D: Instructions to Administer the Evaluation of Clinical Competence 131

APPENDIX E: Informed Consent Forms and Accompanying Letters 136

APPENDIX F: Hiring Rating Form 150

APPENDIX G: Narrative Clinical Evaluation Used by the Department of Physical Therapy at the University of Alberta 152

APPENDIX H: Form Completion Sequence 163

APPENDIX I: Revised Evaluation of Clinical Competence Form 167

APPENDIX J: Questionnaire of the Reactions of Students and Preceptors to the Evaluation of Clinical Competence 175

LIST OF TABLES

TABLE		PAGE
1	Importance Ratings of Physical Therapy Competencies	51
2	Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Evaluation of Clinical Competence with Fourth Year PT Students	55
3	Percentage Agreement Among Preceptors on a 3-point Scale of the Evaluation of Clinical Competence with Fourth Year PT Students	59
4	Intraclass Coefficients and Results of One-way Analysis with Repeated Measures for the Total Scale Score and Subscale Scores on the Evaluation of Clinical Competence with Fourth Year PT Students	61
5	Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Revised Evaluation of Clinical Competence with Fourth Year PT Students	64
6	Kappa Coefficients Among Preceptors for Each Subcompetency in the Revised Evaluation of Clinical Competence with Fourth and Third Year PT Students	67
7	Percentage Agreement Among Preceptors on a 3-point Scale for the Revised Evaluation of Clinical Competence with Fourth and Third Year PT Students	69
8	Intraclass Coefficients and Results of One-way Analysis of Variance with Repeated Measures for the Total Scale Score and Subscale Scores on the Revised Evaluation of Clinical Competence with Fourth and Third Year PT Students	73
9	Correlation of Total Scale Scores on the Revised Evaluation of Clinical Competence with Hiring Ratings and UA Performance Scores for Fourth Year PT Students	74
10	Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Revised Evaluation of Clinical Competence with Third Year PT Students	76
11	Correlation of Total Scale Scores on the Revised Evaluation of Clinical Competence with Hiring Ratings and UA Performance Scores for Third Year PT Students	81

TABLE PAGE

12 Results of One-way Analysis of Variance for the Total Scores Awarded Fourth Year and Third Year PT Students on the Evaluation of Clinical Competence 82

Chapter I

INTRODUCTION

Background to the Problem

Education programs in the health professions have shifted emphasis in recent years toward a better balance between the academic and clinical components of the program. Evidence is that clinical experience now occurs much earlier in the students' programs in all the health professions and there is greater integration between the academic and clinical components. As a consequence, the need for salient evaluation and diagnosis in clinical competence can not be ignored. The purpose of this present study was to develop an instrument for evaluating the clinical competence of physical therapy (PT) students and to establish its reliability and validity.

The concept of competence focuses attention on the completed behaviors necessary for entering professional practice rather than on the curriculum needed to develop those completed behaviors (Davis, Anderson & Jagger, 1979). These completed behaviors or competencies are the knowledge, skills, judgements and attitudes that are required for adequate performance in the profession (Berner & Bender, 1978).

Although the PT literature dealing with clinical competence has become more extensive in recent years, it has focused primarily on defining the behaviors leading to satisfactory performance (Ashton-McCrimmon & Hamel, 1983; Chidley & Kisner, 1979; Davis, Anderson & Jagger, 1979; May, 1977). To date, few clinical evaluations have been

been designed to assess clinical competence of PT students (Bemis, Smith & Mauser, 1978; Texas Consortium for Physical Therapy Clinical Education, 1981). Furthermore, limited or no information is available concerning their reliability and validity. The narrative method of clinical evaluation remains in widespread use, despite a growing awareness of its impreciseness regarding how competent a student may be (May, 1977; Mays, 1973).

Clinical evaluation of students is a vital component to the evaluation process in the PT program at the University of Alberta. By completion of the four year program in PT, students are expected to achieve the clinical competence required for adequate performance upon entering the profession. To assess whether a student is ready to practice PT, results from paper and pencil tests and patient simulations in the classroom setting are supplemented by narrative evaluations of student performance in the clinical setting. The narrative evaluation, however, does not explicitly assess if the desired entry-level clinical competencies have, in fact, been achieved. The information gathered from the various sources is used to decide whether a PT student will be promoted to the next year of the program or will be permitted to graduate.

Statement of the Problem

Given the uses of clinical evaluation for promotion and graduation, a reliable and valid rating instrument to assess clinical competence of PT students should be developed. Yet, the evaluation of clinical competence is a complex endeavor for the behaviors constituting a competent physical therapist are not fully understood (Ashton-

McCrimmon & Hamel, 1983). Clearly, an evaluation of clinical competence must assess behaviors which reflect the demands of the job (Ashton-McCrimmon & Hamel, 1983; Davis, Anderson & Jagger, 1979; May, 1977). Criterion-referenced evaluation provides a means of evaluating adequacy of an individual's performance at any point in the program against specified performance standards (Glaser & Nitko, 1971). A criterion-referenced rating scale should be designed to include the relevant clinical competencies stated in behavioral terms to depict what a student must do to meet the required standards of performance. In this way, evaluations will more consistently and accurately determine if PT students have acquired the requisite knowledge, skills, judgements and attitudes necessary for effective practice as physical therapists.

Objectives of the Study

A criterion-referenced evaluation instrument, "Evaluation of Clinical Competence" (ECC), was developed to evaluate clinical competence of fourth year PT students at the University of Alberta (UA). The steps of test development followed were:

1. Clinical competencies required for PT practice were identified and validated, and the standards of performance by which to assess the competencies were determined.
2. The instrument was designed as a behaviorally-anchored rating scale to determine if a PT student can perform clinical competencies required for entry into the profession as judged by four standards of performance.

3. The 4-point rating scale was tested to establish its reliability and validity with fourth year PT students at the UA.

Research Questions

The instrument development phase was guided by two questions:

1. What are the behaviors constituting clinical competence in physical therapy?
2. What are the standards by which to judge the quality of performance of each clinical competency included in the evaluation instrument?

The instrument validation phase asked the following questions:

1. Is the inter-rater reliability of the ECC equivalent to the reliability measures of similar clinical evaluations reported in the medical and physical therapy literature?
2. Do students who rate highly on the ECC also have high ratings as potential employees?
3. Do students who rate highly on the ECC also have high ratings on the narrative evaluation currently in use at the UA?
4. Do experienced fourth year students perform better than novice third year students on the ECC?
5. Do students and preceptors find the use of the ECC helpful in the professional education of the students?

Significance of the Study

The major goal of the PT program at the UA is to assist students to develop the competencies necessary for effective practice as physical therapists (May, 1977). The opportunity for the student to

acquire these desired competencies is provided by both the academic and clinical components of the program. The clinical component is valued highly by the Department of Physical Therapy, which requires that students satisfactorily complete 1200 hours of clinical experience prior to graduation (Policy of the Department of Physical Therapy, 1981). Yet, no research has been conducted on the methods of evaluation or the variables of the clinical training environment.

The profession of PT requires its practitioners to have current knowledge, evaluate accurately, execute sound judgements, institute appropriate treatment and display proper attitudes. The compassion with which patient care is implemented and the nature of the therapist-patient relationship are also aspects of the therapist's role (McDaniel, 1964). In today's changing health care system, well prepared physical therapists are needed to assume and to perform more diverse roles and responsibilities, such as in teaching, supervising and consulting, which in the past had not normally been expected from a first-year graduate (Chidley & Kisner, 1979). Ongoing evaluation of competencies of physical therapists in the clinical setting is needed to establish a firm scientific basis from which to determine criteria for measuring clinical competence (Ashton-McCrimmon & Hamel, 1983).

Observational evaluation provides the only opportunity to assess certain clinical competencies, hence justifying its usefulness in certifying clinical competence (Irby, Evans & Larson, 1978). Narrative reports are often used to document preceptors' observations of clinical performance of PT students despite their susceptibility to preceptor biases (Demers, 1978). PT preceptors studied by Scully and Shepard (1983) expressed difficulty in recounting and writing their

impressions of a student's behavior and progress on the selected activities included in the report, mainly because it was time-consuming and infringed on both patient care and personal time. Kapp (1981) argued that preceptors were often reluctant to evaluate candidly due to an apprehension about the inescapable subjective nature of evaluating clinical performance and a fear of legal liability accentuated in recent years by societal concerns for students' rights. Despite difficulties and concerns, PT preceptors felt a professional responsibility to evaluate honestly given the uses of clinical evaluation in PT (Scully & Shepard, 1983). In addition to the hardships, evaluation had a positive impact on professional growth reminding therapists of the skills that they should possess (Scully & Shepard, 1983).

Evaluations of students' clinical performance must be both reliable and valid if they are to be worthwhile for making decisions regarding students' clinical competence-validity being limited by the extent of the measures of reliability (Allen & Yen, 1979). Furthermore, the increasing demands of the public and government for accountability of health professions makes the development of reliable and valid measures of clinical competence in PT even more important (Newble, 1976).

Inaccurate clinical evaluations fail to inform the students about how they measure up in terms of relevant competencies (Kapp, 1981). Furthermore, the students' motivation, confidence and appreciation of specific feedback may be undermined (Sternburg & Brockway, 1979). Equally serious, inaccurate evaluation may promote or graduate students when they should not be, at peril to the

profession, the public and the student (Kapp, 1981). The professional and lay public have an interest in safeguarding continued competence by ensuring that only competent students will graduate. The students, likewise, have a vested interest in their career development.

Because of the far-reaching consequences of clinical evaluation to the students, the public and the profession, every attempt should be made to develop a well-designed rating instrument in PT and to establish the reliability and validity of its results. An evaluation and the method of administration should be guided by the ultimate purpose for which the results will be used, should be congruent with expectations and activities of those being evaluated, and should consider the effects of the evaluation process on the individuals involved (Berner & Bender, 1978).

Delimitations

The study was delimited as follows:

1. The ECC was designed to evaluate clinical competence of fourth year PT students only. The competencies evaluated are congruent with the competencies required of a graduate physical therapist and with the objectives of the fourth year clinical program. The fourth year objectives are of a general nature stressing integration of competencies and problem-solving skills more so than in the third year program where acquisition and application of specific techniques are mainly emphasized.
2. The study was limited to the evaluation of clinical competence of PT students at the UA during their compulsory clinical

placements at clinical facilities in Edmonton, Calgary and Red Deer, Alberta and Brockville, Ontario.

3. Fourth year PT student data, collected during two different clinical placements (n=29 and n=25, respectively), were used to evaluate the performance of the ECC with fourth year PT students.
4. Third year PT student data collected during one clinical placement (n=23) were used to verify construct validity of the ECC intended for fourth year PT students.
5. Two preceptors were required to observe and evaluate each student for 15 minutes daily throughout the clinical placement in order to obtain a measure of inter-rater reliability. In a typical clinical placement, only one preceptor supervises and evaluates student performance.

Limitations

The following are considered to be the limitations of this research:

1. Students were volunteers from the population of PT students in the clinical program at the UA. Only three fourth year PT students did not volunteer and 12 third year PT students did not volunteer.
2. Selection of preceptors was made on a volunteer basis from the population of physical therapists employed by the clinical facilities agreeing to participate in the study.
3. The sample of students was small and restricted to PT students from the UA; thus, results should be generalized to a larger, similar population with caution.

4. One of the preceptor pairs was required to evaluate students on both the ECC and the narrative evaluation currently in use at the UA; therefore, there is a potential source of carryover from one evaluation to the other.
5. One of the preceptor pairs was also responsible for supervision of students throughout the clinical placement; consequently, observations of students' performance outside the times scheduled for the study may be a potential source of bias.
6. Missing data, procured when the "not observed" option on the rating scale was used, restricted the statistical analysis.
7. The necessity for two preceptors to observe and evaluate each student induced feelings of anxiety in the students which might have detracted from their level of performance.
8. The necessity for two preceptors imposed an extra demand on preceptors' time and efforts which, if it infringed on patient care responsibilities, might have lessened their compliance with the requirements of the study.

Terms and Definitions

The following terms are defined as they are key terms in the text of the thesis:

clinical competence is the quality of being capable of adequately performing tasks and assuming roles of a physical therapist with their associated requisite knowledge, skills, judgements and attitudes.

preceptors are physical therapists employed by clinical facilities approved to supervise and evaluate PT students from UA during

their compulsory clinical placements.

first preceptor is the physical therapist normally assigned to supervise the student throughout the clinical placement.

second preceptor is the physical therapist working in close proximity, who is assigned to observe and evaluate the student for the purposes of the study.

physical therapists are graduates of an accredited program of physical therapy.

clinical placement is a half-day of clinical experience for PT students in approved clinical facilities for a duration of four weeks.

Chapter II

SURVEY OF THE LITERATURE

There are many reasons cited in the health education literature for measuring clinical performance. They include: (1) certification of competence, (2) maintenance of health care delivery, (3) provision of feedback to the students, and (4) improvement of the instruction process (Mackenzie, 1974). Fundamentally, they are all directed toward producing professionals, whose competence can be trusted by the lay and professional public.

Methods Used in Evaluating Clinical Competence

Clinical competence is defined in terms of either the outcomes of clinical performance on patient care or in terms of the components of the process leading to satisfactory performance (Barro, 1973; Newble, 1976). To evaluate both defined aspects of clinical competence, different methods of observation and measurement must obviously be used.

Evaluation of students in many health professions is conducted entirely on process measures as students rarely assume direct responsibility for patient care, an essential prerequisite for outcome evaluation. Process evaluations are based on what a practitioner actually does to provide proficient and safe care to patients (Newble, 1976).

Factor analysis of medical evaluations has revealed a number of factors of the construct of clinical competence. These factors may assist in the determination of criteria constituting successful performance. DiMatteo and DiNicola (1981) identified two factors termed technical skills and interpersonal skills which accounted for 27.1% and 60.4% of the variance, respectively. Similarily, Davidge, Davis and Hull (1980) found two factors which they called problem-solving and interpersonal skills. Dowaliby and Andrews (1976) identified three factors: data gathering, interpersonal skills and clinical judgement. Anwar, Bosk and Greenburg (1981) classified the many factors found after separate analysis of thirty-eight surgical evaluation forms into seven categories of clinical competence. Knowledge, clinical skills and clinical judgement comprised 31.8% of the total factors. Intellectual capacity (teaching and oral communication) and work habits accounted for 23.9% of all the factors. Personal characteristics, such as dependability, reliability, responsibility, emotional stability, maturity, integrity, honesty, morality and motivation, accounted for another 27%. Interpersonal relations made up the remaining 18%. In summary, clinical competence is the knowledge, skills, judgements, and attitudes required for adequate performance for delivery of optimal patient care (Berner and Bender, 1978).

The variety of technical and interpersonal skills to be evaluated in health education demands that a wide variety of process evaluation methods be used. Multiple-choice tests are frequently used. They are very reliable, easy to score, and cover large areas of content; however, they tend to measure predominantly recall of

knowledge (Levine, McGuire and Nattress, 1970). Newble (1976) argued that examinations to certify clinical competence should not rely solely on multiple-choice questions but rather should emphasize application of knowledge to the clinical situation. Other more valid measures should, therefore, be included: patient-management problems, patient simulations, computer simulations, criterion-referenced clinical examinations, oral examinations, direct observation and multiple methods (Newble, 1976).

Observational Evaluations

Direct observation entails systematic observation of the interaction between students and their patients, followed by an evaluation of "on-the-job performance" using checklists and rating scales. Factors suggested by Levine (1978) which hamper the use of the rating scale as an objective measurement instrument are the poorly designed evaluation instruments in use, the complexity of behavior to be evaluated, the lack of well developed competencies, the lack of training for evaluators in the use of the instrument and rater biases coupled with insufficient time for observation and the diversity of the clinical environment. However, the educational measurement literature, by virtue of its definition of evaluation, accepts that the evaluation process can never be fully objective. Evaluation is the qualitative and quantitive descriptions of behavior along with descriptions of value judgements concerning the desirability of the behavior (Gronlund, 1976).

Irby, Evans and Larson (1978) stated that observational evaluation as determined by rating scales is a justifiable method by which

to certify competence, despite its recognized subjectivity, because it provides the only opportunity to assess certain competencies. The competencies that can be observed in a clinical setting include not only the students' applied knowledge and technical skills but also students' clinical judgements, interests, work habits, communication and interpersonal skills (Anwar, Bosk and Greenburg, 1981). Wigton (1980) used the Delphi technique to rank variables considered important to performance of first year resident physicians. The four highest ranking qualities were dependability, relationship with patients, clinical judgement and problem formulation. Only the latter lends itself to objective evaluation. Bosk (1979) indicated that in surgical training there was also strong emphasis placed on qualities that exemplify honesty, trustworthiness, ethics and dependability which required a subjective interpretation of the motives and morals of the surgical resident's professional conduct.

Even though observational evaluative methods offer the most realistic appraisal situation, this advantage simultaneously interferes with standardization of the evaluation process. Each student will be seen with different patients of varying complexity which can lead to environmental errors, and each student will be seen from the observer's own point of view leading to observer errors.

The subjectivity of observational evaluations stems mainly from errors introduced by the personal biases of the observers, particularly when evaluating covert behavior or that which is not readily observable (DeMers, 1978). Guilford (1954) identified six common bias errors, some of which have been studied by the health professions: (1) error of leniency/stringency, (2) error of central tendency, (3)

halo effects, (4) logical error, (5) proximity error, and (6) contrast error.

Errors in Observational Evaluations

Petersdorf (1977) reported stringency error and leniency error among oral examiners in medicine. The stringent examiners had a failure rate as high as 53%; lenient examiners had a failure rate as low as 7%. Waugh and Moyse (1969) observed during oral examinations that some examiners pressed for preconceived responses and others did not encourage students who were not doing well. Dietz and Slaymaker (1976) attributed the clustering of Occupational Therapy field performance scores toward the high end of the scale to a leniency error whereby raters consistently gave students the benefit of the doubt. The central tendency may have also operated here, in that raters tend to avoid low ratings to avoid justifying the low rating or to avoid appearing as a poor teacher.

Bull (1959) suggested that factors related to personality play a more significant role in determining clinical grades in medicine than knowledge and skill. Marienfield and Reid (1980) demonstrated a halo effect where preceptors overestimated knowledge for medical students described as highly motivated and attentive to patient care. Fourteen students whose knowledge was rated as superior by four to five preceptors performed only marginally on the National Board of Medical Examiners (NBME) internal medicine subtest (n=188). Beneson, Stimmel and Aufses (1981) also illustrated a false negative error where 61% of the students who were classified as honors by preceptors on a surgical

clerkship (n=51) were below the cutting score for honors classification on the NBME surgical subtest.

Anwar, Bosk and Greenburg (1981) found that a surgical resident earned discredit if errors made were repeatedly viewed as blame-worthy or of the resident's own fault; a surgical resident earned credit if errors made were seen as blameless or of no fault of the resident. They revealed that poor knowledge, skills and judgement were given as reasons in 75% of those residents not advanced to chief resident and/or not certified for the NBME; and problems with personal qualities were the reasons given for dismissal of 23% of those residents not advanced and/or not certified. They concluded that poor clinical judgement is not a reason for dismissal unless coupled with a deficit in personal qualities. Scully and Shepard (1983) disclosed that physical therapists supervising students tolerated deficiencies in knowledge and performance skills, expressing optimism that performance difficulties can be overcome with increased experience. Deficiencies in the ability "to work with people", however, were less tolerated expressing that affective skills are influenced by life experiences and are difficult to change. Holloway, Collins and Start (1968) reported that extroverted students received higher ratings than warranted in oral examinations, while introverted students obtained lower ratings than called for.

Wigton (1981) provides a good example of the variation in assessment which arises from personal qualities. Twenty-five videotaped case histories were prepared by five different students presenting five case histories which varied in degree of clinical sophistication. Each of the 15 faculty members ranked five presenta-

tions (1 best, 5 worst) and each presentation was ranked by three evaluators. There was a significant difference in rank given depending both on which student was presenting ($p \leq .006$) and what case was being presented ($p \leq .003$). Students A and C ranked higher than students B and D, who ranked higher than student E. Case 2, an unsophisticated but thorough history, written by a medical student on his first clerkship, ranked above the other cases written by senior medical faculty, staff and students. Case 2 was judged best when presented by student A and worst when presented by student E. The correlation coefficient between any two faculty members viewing the identical presentation was .39 when standard scores were used to correct for evaluator stringency or leniency errors.

Given that subjectivity is intrinsic to clinical evaluation, the question that still remains is how can evaluation be designed so that both public and professional interests are served. This statement implies that evaluations must be designed to reduce uncertainty and bias, thereby providing more consistent or reliable results. A number of methods are suggested in the medical education literature to improve reliability.

Methods to Improve Reliability of Rating Scales

Reliability is essential to rating scales because it provides more consistent and accurate results (Anwar, Bosk and Greenburg, 1981). Rating scales for resident physicians and medical students have been most extensively studied and have been found to be quite reliable with measures of internal consistency ranging, for the most part, from .20 to .85. According to the classification of observer

agreement for categorical data suggested by Landis and Koch (1977), a Kappa coefficient between .21 and .40 is a fair level of agreement; whereas, 0 to .20 is only slight agreement and .41 to .60 is moderate agreement between observers. Low reliabilities indicate that differences in performance by individual students is mainly due to rater error and variable clinical situations. Reliability of a rating scale can be increased by encorporating factors during its construction which reduce the amount of rater error (Levine, 1978). These factors are discussed next.

Well-defined Competencies and Performance Criteria

The competencies necessary for entry into a profession must be identified, organized in order of importance and written in appropriate terminology (Berner and Bender, 1978). In search of clinically significant competencies, they advised a review of the literature and professional documents and a review of clinical practice. Methods recommended to obtain data directly from clinical practice were: (1) chart audit, (2) critical incidence technique as proposed by Flanagan, (3) diary study of practitioners, and (4) task analysis by expert judges.

After competencies have been identified, they should be worded in a way that tells both the student and evaluator what the student must do, in terms of observable behavior, to perform acceptably (Shepard, 1977). Baker (1974) suggested that competencies be defined in terms of domains. Some competencies require the student to demonstrate performance skills (psychomotor domain), others require the student to have knowledge (cognitive domain), while still others involve attitudes (affective domain). Taxonomies are available to

help decide on a level of performance to be expected within each domain (Campbell, 1977).

Associated with each competency is a rating scale which allows the observer to rate the quality of performance seen by comparing it against the predetermined criteria for successful performance. The criteria, also described in terms of observable behavior, are illustrative of the levels of mastery of competence.

Dielman, Hull and Davis (1977) reported inter-rater reliability statistics on a behaviorally-anchored rating scale of on-the-job performance which defined four levels of behavior under each of the fifteen items in the scale. Over one year there were 1749 ratings of 355 medical students completed by resident physicians and 1908 ratings of 389 medical students completed by attending physicians. The inter-rater reliability for residents' ratings for the total scale was .61 ranging from .30 to .51 for the fifteen single items; the inter-rater reliability for attendings' ratings for the total scale was .40 ranging from .22 to .37. The higher reliabilities for residents may be because they showed more contact hours with students than did attending physicians ($t=8.62$ $p \leq .001$) (Erviti, Fabrey and Bunce, 1979).

Inter-rater reliabilities are somewhat lower for the more subjectively worded rating scales of clinical performance than the behaviorally-anchored rating scales. Reliabilities of a subjective rating scale reported by Littlefield (1981) was low (.13) during the first year of use with medical students but greatly improved (.42) over four years, presumably due to the annual feedback that was provided to the faculty. The coefficient increased from .42 to .65 in

the fourth year when the number of preceptors per student was increased from two to five with the addition of residents as preceptors. The mean of the resident rating was significantly higher (9.45) than the mean faculty rating (8.79). O'Donohue and Wergins (1978) reported similar reliabilities of ratings of medical students with intraclass correlations of .381 for residents and .323 for attending physicians. Residents also tended to give slightly higher mean scores than attendings, but the ratings correlated with each other (r=.704), indicating that an average of multiple ratings by these two groups was more consistent than individual ratings for each student. This finding is consistent with the Spearman-Brown formula.

Furthermore, in dentistry Gaines, Bruggers and Rasmussen (1974) compared effects of subjectively and objectively worded performance criteria. They showed inter-rater reliability, as estimated by intra-class correlation coefficients, increased from .26 with subjective criteria to .56 with objective criteria defining a 3-point scale for the seven raters evaluating wax carvings of eight students on two occasions three months apart. Analysis of variance showed significant differences between raters when using the subjective scale but no significant differences when using the objective scale.

In contrast to the high reliabilities for resident physicians in the previous studies mentioned, examination of resident performance evaluations from four different sources by DiMatteo and DiNicola (1981) found that the highest reliabilities were among ratings by attending physicians with alpha coefficients ranging from .83 to .96 followed next by residents themselves with coefficients ranging from .67 to .93. Self ratings were the least internally consistent (.56 to

.83), while patient ratings were nearly as reliable as both the attending and resident physician ratings. Oaks, Scheinok and Husted (1969) also revealed that residents and full professors assigned significantly more inaccurate ratings to medical students than associate and assistant professors using the Goodman procedure of mismatches. They concluded that residents, despite close contact with students, may be vulnerable to personal biases. Further to this, Erviti, Febrey and Bunce (1979) did not find a systematic difference between the reliability of residents and faculty evaluating medical students.

Scales with highly specific competencies and criteria yield higher reliability, particularly when the scales are task-specific. Lui (1980) found that inter-rater reliability was .75 for a spinal anaesthesia skill and .83 for anaesthesia setup and machine checkout. Fiel, Griffen, McNeil, Ajunwa, Salisbury and Aasved (1979) demonstrated an inter-rater reliability of .87 for a post test measuring blood pressure readings. Schor, Grayson, Nugent and Oken (1977) reported that a simulation evaluation with students in a Health Associate program yielded alpha coefficients of .86 for data gathering, .97 for physical examination, .94 for interpersonal skills and .88 for health education. Improved reliabilities among task-related rating scales illustrate that whenever possible evaluation should be limited to behavior as it is occurring.

The findings by Schor, et al. (1977) coincide with findings by DiMatteo and DiNicola (1981) where items measuring interpersonal skill of resident physicians had higher reliabilities (.44 to .96 with a median coefficient of .90) than did items measuring technical skill

(.36 to .91 with a median coefficient of .79). Liston, Yager and Strauss (1981) also found agreement by psychiatrists was significantly poorer for judgements about technique skills than about communication skills with psychiatry residents (X^2=8.57 $p \leq .01$). Scherer and Rogers (1980) disclosed that nonverbal cues of immediacy (close therapist-client distance and eye contact) significantly improved ratings of the therapist's interpersonal skills and effectiveness (F=50.69 $p \leq .0001$). These results may indicate that there is greater uniformity among the components of interpersonal skill than among the components of technical skill. However, the ratings of residents' interpersonal and technical skills by attending physicians were substantially correlated with one another (r=.74) (DiMatteo and DiNicola, 1981), which may reflect a strong relationship between both aspects of care in actual medical practice.

Number of Scale Points

DeMers (1978) stated that three to seven scale points should be provided; more points should be used when fine discriminations can be made. Also, some provision should be made on the scale to permit evaluators to omit items that they feel unqualified to judge.

There is evidence to suggest that employing the minimum number of useful points increases the reliability. Erviti, Fabrey and Bunce (1979) found that the average Kappa coefficient over the forty resident and faculty pairs was .26, but when the 4-point scale was reduced to a 2-point scale across all forty pairs, the reliability coefficient increased to .53. The mean number of times that the "do not know" option was used was significantly less for residents than faculty (t=5.93 $p \leq .001$). This result seems reasonable considering

that the number of student contact hours was significantly higher for residents, as stated earlier.

In dentistry, Houpt and Kress (1973) compared a 2-point scale to a 5-point scale for evaluating cavity preparations on eight criteria. Both intra-rater and inter-rater reliabilities were higher when using the 2-point scale to evaluate the eight criteria, but reliability for the overall scores did not differ significantly for the two scales.

Multiple Observations

Inter-rater reliability seems to be low when dealing with judgements from individual observers, therefore, ratings from several observers should be collected. The reliability of ratings on single items can increase when ratings by several observers are averaged, thus eliminating the error due to observer variation (Printen, Chappell and Whitney, 1973). Further to this, they reported that the estimated correlation between clinical performance ratings by two raters averaged across the ten item rating scale was .64, while the probability of a student receiving the same score from two separate groups of six raters was calculated to be .92.

DiMatteo and DiNicola (1981) recommended that resident performance evaluations be conducted by ratings from attending physicians, peers, patients and self-ratings. The substantial reliabilities from all four sources demonstrated the accuracy and utility of these sources of physician evaluation. However, the intercorrelations among evaluation from these sources were also fairly independent, indicating that they provide separate measures of physician performance. Attending physicians and peers tended to agree best with each other (.64). Self-ratings had a moderate relationship to ratings by attendings

(.31) and peers (.38). Patient ratings shared little variance with ratings by the attendings (.16), peers (.02) and self (.10).

Another approach to multiple observation is use of multiple methods whereby a battery of methods attempt to match the most appropriate method to the aspects of clinical competence being tested. Systematic study of evaluation methods is needed to provide more comparative data for enhancement of the study of clinical evaluation.

O'Donohue and Wergins (1978) utilized preceptor ratings of clinical performance, oral examinations and written examinations to evaluate medical students in a clerkship. The reliability of preceptor ratings was .323 for attending physicians, in contrast to the reliability of oral examiners at .754 ($p \leq .001$). The intercorrelations of the three methods were small, ranging from .19 to .25, indicating that each evaluation assessed different aspects of student performance. Littlefield (1981) also utilized the same three evaluation methods with similar results. The reliability of preceptor ratings was .42 for attendings. The oral (.78 to .92 over four years) and written (.59 to .84 over four years) examinations were highly reliable. Again, modest intercorrelations suggested that multi-method evaluations capture distinct aspects of performance.

Methods to Improve Validity of Rating Scales

Reliability is an important requirement of clinical evaluation because it limits validity, but reliability does not guarantee validity or relevancy of the qualities measured (Allen and Yen, 1979). Anwar, Bosk and Greenburg (1981) warned that there is a danger in assuming that those qualities which can be easily and reliably

measured are the only ones relevant to evaluation.

To be sure that a rating scale evaluates students on what they are supposed to do in order to be ready to practice a profession, the steps of test development recommended by Allen and Yen (1979) should be followed. These steps are: (1) plan a test blueprint to cover all the important competency areas, (2) write items for each competency area in the plan, (3) administer all the items to examinees representative of the population with which the final test will be used according to standardized instructions and time limits, (4) select the best items and refine them if necessary, and (5) administer the revised test on another representative sample of examinees under the same standardized conditions.

In the planning stage (steps 1 and 2), crucial to content validity, a test blueprint is developed so that all the important competencies are sampled. Weights may be given to certain competencies to indicate their degree of importance relative to the other competencies sampled (DiMatteo and DiNicola, 1981; Oaks, Scheinok and Husted, 1969). Weights are particularly helpful when important competencies are not readily amenable to observation. The validation stage (steps 3 to 5) may be designed to test the three types of validity: concurrent, predictive and construct validity.

Little research has been done on construct validity. Lass, Kornreich, Hoffman and Friedman (1977) demonstrated consistency and an upward trend in ratings of clinical performance of the same students throughout medical school and internship. Davidge, Davis and Hull (1981) found that students who were evaluated both early and late in the clerkship showed significant improvement on problem-solving items

but did not show improvement in interpersonal skill items. These results may be taken as evidence supporting the construct validity of the rating scale, inasmuch as the goals of the clerkship emphasize improvements in problem-solving skills over interpersonal skills. Furthermore, improvement is expected as more experience is gained from early to later clerkships during the training program.

Development and Validation of Physical Therapy Competencies

A number of articles and professional documents have been written in order to upgrade clinical curriculum and supervision in PT. Yet, the underlying constructs or competencies of good PT practice have not been well delineated. An understanding of the construct would enhance evaluation and differentiation between "good" and "poor" PT students.

Analysis of current professional practice would identify competencies which would also serve as a basis for establishing performance standards or criteria. McDaniel (1964) applied the critical incident technique as a method of objectively finding actions that distinguish between good and poor physical therapists. Four hundred ninety four incidents reported by supervisors of PT departments across the United States were analyzed. A profile of an ideal physical therapist was described by McDaniel (1964) as one whom:

> related well to patients by developing confidence and interest; made good clinical judgements on treatment selection, progression, patient referrals, appliance selection and patient safety; interpreted and carried out orders wisely, improvising as needed; adjusted patient treatment as physical and psychological needs varied; taught patients and family effectively; coordinated closely with other services and handled equipment with care. (p. 241)

Hence, clinical competence is something more than knowledge and skill, it also involves clinical judgement, which is reflected by the ability to improvise and to solve problems (Watts, 1971).

Ashton-McCrimmon and Hamel (1983) compiled a list of 236 competencies through use of documentation descriptive of PT practice. These competencies were subsequently edited to 224 competencies by six PT experts. The importance of these competencies was rated on a questionnaire sent to 349 practicing physical therapists in Quebec. Importance ratings of the competencies were given by 179 respondents. Competencies were grouped into eleven categories. The importance rating of the categories ranked according to average mean results from the most important to the least important were: planning of treatment (78.8% importance score), theoretical knowledge (73.3%), interpersonal relations and communication skills (73.3%), evaluation (71.3%), personal qualities (64.1%), professional ethics and attitudes (69.4%), professional growth (68.1%), administrative skills (51.1%), awareness of health delivery (45.1%), treatment skills and implementation (41.6%) and research skills (27.5%). There were significant differences in importance ratings for years of experience and place of training. Physical therapists with up to two years of experience and those with more than fifteen years of experience both rated the categories higher than did the other five groups with intermediate years of experience. The group with more than fifteen years of experience gave the highest importance ratings to professional ethics, interpersonal skills, awareness of health delivery and administrative skills; whereas, the group with up to two years of experience had higher ratings on evaluation, treatment implementation and research

skills. Foreign-trained therapists rated all categories higher than did those trained in Quebec.

Wilhelm (1969) used the Q sort technique to identify tasks that PT students must do successfully. Student behavior was described on two dimensions: a competency domain and the level of competency. Ten competency domains were found. Three levels of competency defined each domain. The levels of competence began with the ability to apply knowledge under supervision, progressed to the ability to apply knowledge to new situations when supervised and evolved to the ability to practice without direct supervision. A rating scale was constructed using these two dimensions. No validation study was done to verify either competencies identified or reliability and validity of the instrument itself.

The Ohio University Physical Therapy Department (Chidley and Kisner, 1979) used expert judges to conduct a task analysis of clinical education and define the competencies involved in competent performance. Clinical education was characterized by three program goals: direct patient care, PT delivery and personal/professional growth. Under each goal, seven entry-level competencies for PT graduates were defined as evaluating, planning, communicating, treating, teaching, supervising, and contributing. This list of entry-level competencies was validated through use of a questionnaire sent to all 1974 and 1975 graduates of the program. Interestingly, the results indicated a high demand for such functions as evaluating, teaching and supervising, which had not been stressed in earlier studies (McDaniel, 1964; Wilhelm, 1969). Competence was conceptua-

lized as adequacy of physical therapist performance and patient service emerging from competencies in all three program goals.

The Canadian Physiotherapy Association in 1982 developed the Recommended Core Curriculum for Physiotherapy Education Programmes which outlined what a student is expected to perform upon graduation. The section on clinical practice was divided into four content areas called therapeutic process, communication, documentation and safety under which were listed the criteria of performance.

The American Physical Therapy Association in 1981 developed a manual, Competencies in Physical Therapy: An analysis of practice, following a task analysis of practicing physical therapists. The operational definition of competency was "a significant behavior or activity, performed in a specific setting, to a specific standard" (p. 1088). For each behavior or activity a major competency statement was made with necessary situational givens and standards. The activity was also depicted in a Gagne's heirarchical array of terminal competencies with their supporting subactivities, skills and knowledge (Davis, Anderson & Jagger, 1979).

In summary, the analysis of clinical competence into discrete content areas may serve as tentative parameters for defining the construct of clinical competence. It should be possible to make generalizations applicable to students from studies of practitioners. An analysis of competence informs supervising therapists on what to expect from students and guides students in knowing what skills they are expected to perform and to what standards.

Physical Therapy Rating Scales

A survey of clinical evaluation forms received from seven of the ten Physical Therapy Departments at Canadian universities revealed that some type of rating scale is used to evaluate students during the clinical component of the education program. The common form was a rating scale with space provided for comments.

Each Physical Therapy Department has developed its own clinical rating form. Forms varied greatly in format, content and degree of objectivity. Specifically, the forms differed in the competencies evaluated and only one of the forms indicated the degree of importance of each competency. None of the forms had as criteria, specific observable behavior, which would indicate attainment of a competency. Three forms defined the levels of competence that students are required to achieve for adequate performance upon entry into the profession. There was no evidence provided that validity or reliability studies have been conducted on any of these evaluation forms.

A review of the PT education literature revealed few evaluation instruments to measure clinical competence. None of these reported instruments has been subjected to the rigors of test development and validation.

Kern and Mickelson (1971) at Temple University described the development and use of a combined checklist-rating scale for the primary purpose of diagnosing the strengths and weaknesses of PT students. Contained within the instrument were ten terminal behavioral objectives and their component behaviors, which were grouped into four categories: professional practices, treatment skills,

supervisory practices and specific techniques. The performance criteria for the rating scales were based on levels of supervision required in order for the student to meet the objectives. No study was done to demonstrate the reliability and validity of this instrument.

Mays (1973) conducted a study to determine the reliability of the rating scale used to evaluate senior PT students from Virginia Medical College. The rating scale consisted of eleven objectives, each with two or more criteria. Each student was evaluated by two different raters, one for each six week affiliation in the summer of 1970. Forty-three physical therapists completed evaluations on thirty students and ranked the objectives from the most important to the least important with none being given the same rank. The inter-rater reliability, Kendall coefficient at .604, was significantly different from zero at the .001 level. The four objectives judged to be significantly more important than the other objectives were application of basic knowledge to PT, application and teaching of PT procedures, needs of the patient and observation ($p \leq .01$ by the Kolmogorov-Smirnov test). The grades for the top four ranking objectives had high correlational values with the overall grades received by the thirty students at Rho=.69 to .90; however, lesser ranked objectives also has high correlational values at Rho=.56 to .91, which the author interpreted as a halo effect. She concluded that the evaluation form could be shortened from eleven to four objectives to yield more reliable results. No further studies have been reported.

Bemis, Smith and Mauser (1978) developed a criterion-referenced form for clinical evaluation of PT students at Georgia Medical

College. The form consisted of twenty-nine questions divided into five competency sections: patient evaluation, program planning, implementation of treatment program, interpersonal relations and professional behavior. Under each question there were four descriptions of the possible behaviors ranging from incompetent to highly competent. The rater was asked to choose the description which best described the student's performance as observed by the rater. A "not-observed" option was available. A space was provided at the end of each section for comments that would clarify the reasoning for choices made. The reliability and validity of this instrument was not reported.

The Chartered Society for Physiotherapy in Great Britain designed a Continuous Assessment Record Book (C.A.R.B.) in 1976 which is a check-out of student's performance of specific treatment procedures to determine if a safe and effective level of performance has been reached. The Texas Consortium for Physical Therapy Clinical Education modified the C.A.R.B. in 1980, placing greater emphasis on the continued assessment of the student's progress toward adequate mastery of essential skills throughout clinical experiences. The Mastery and Assessment of Clinical Skills (MACS) is more comprehensive than C.A.R.B., in that it includes skills related to professional behavior, communication and interpersonal relations, program planning, teaching, administration, research and special situations. Each of the 54 skills included in the MACS was defined by key indicators of entry-level performance and, was checked according to whether satisfactory entry-level performance had been met or not. No

statistics were reported in the manual accompanying either evaluation system.

Scully and Shepard (1983) found that evaluations are prevalent in PT clinical education. Verbal exchange with the student or observation of patient-student interaction were mostly used to determine the student's readiness to perform in different clinical situations. Evaluations were private and in an atmosphere that permitted certain errors and did not cause undue psychological stress. Clinical therapists expressed a strong professional responsibility to certify competence in clinical education but expressed difficulty in recounting and writing their impressions of the student's behavior and progress on selected competencies in narrative evaluations, mainly because it infringed on patient care time and personal time.

In contrast to the Physical Therapy evaluations, the American Occupational Therapy Association (AOTA) has developed the Field Work Performance Ratings (FWPR) which has been subjected to statistical scrutiny (Deitz & Slaymaker, 1979; Muthard, Morris, Crocker & Slaymaker, 1976; Slaymaker, Crocker & Muthard, 1974). Items from many different evaluation forms were reduced to 53 items and divided into five performance areas: data gathering, treatment planning, treatment implementation, communication skills and professional characteristics. Each item was a behavioral statement of an aspect of clinical performance and was rated on a 4-point scale ranging from rarely correct performance to consistent performance. The rating scale was tested on 934 Occupational Therapy (OT) students between June 1 and December 31, 1972. The inter-rater reliability, obtained by correlating independent ratings from two therapists who rated each

student, ranged from .60 for data gathering to .72 for both communication skills and professional characteristics with an overall reliability at .76. The level of internal consistency of items within the five performance areas ranged from .87 to .97 as calculated by Hoyt's analysis of variance. Correlation between FWPR scores and mean hiring ratings completed by the two therapists who rated student performance on the FWPR was .76, and correlation between FWPR and total RPSA scores (the original scale adopted by AOTA) was .80, thus demonstrating good concurrent validity. Because scores on FWPR clustered toward the high end of the scale, Dietz and Slaymaker (1979) revised the rating to a 5-point scale. Results from 67 OT students evaluated by both the original and revised FWPR forms indicated that student scores were dispersed more effectively and discriminated more accurately. The revised form demonstrated significantly greater variance; however, scores still tended to cluster at the high end of the scale. Muthard, Morris, Crocker and Slaymaker (1976) reported that the correlations between the previously administered FWPR and the supervisor's job rating of clinical performance of 208 working Occupational Therapists revealed a lack of predictive validity at .09 but the correlation was not significant at the .05 probability level.

Conclusion

Evaluations of student performance serve to assist students to become safe and competent practitioners and to assure society that only those students who are competent will graduate. Yet, none of the evaluations in PT assess clinical competence required for adequate performance upon entry into the profession has been achieved by

students. Furthermore, systematic studies have not been conducted to determine the reliability and validity of the clinical evaluations reported in the PT literature and professional documents. An evaluation instrument, which determines if a PT student can perform entry-level competencies in the clinical setting, should be developed and tested. Observational evaluation in the naturalistic setting provides the only opportunity to see if clinical competencies can actually be performed in the complex clinical environment. Rating scales are suited to observation and evaluation in the clinical setting, which is characterized by a wide range of patients, situations and observers. Inconsistency of observer ratings may be lessened by careful definition of behaviors to be evaluated along with the standards of performance by which to judge them.

Chapter III

METHOD

Instrument Development Phase

To develop an instrument to evaluate clinical competence of fourth year PT students at the UA, four steps were followed: (1) A list of competencies in PT was prepared by a survey of the literature and professional documents and was verified by physical therapists from diverse areas of clinical practice and education, (2) A questionnaire was sent to physical therapists working in Edmonton to validate the list of competencies, (3) An evaluation instrument was planned and constructed, and (4) Instructions to administer the instrument were devised.

Identification of Competencies

A list of 226 process competencies was compiled which included a wide array of knowledge, skills, judgements and attitudes necessary for safe and optimal care to patients by PT students. The information was gathered from evaluation instruments reported in the literature (Bemis, Smith & Mauser, 1978; Kern & Mickelson, 1971; Mays, 1973; Slaymaker, 1978; Wilhelm, 1969), articles on clinical education & practice (Chidley & Kisner, 1979; Davis, Anderson & Jagger, 1979; May, 1977 and 1977; McDaniel, 1964) and professional documents (American Physical Therapy Association Competence Manual, 1981; American

Physical Therapy Association Standards for Basic Education in Physical Therapy, 1972; American Physical Therapy Association Standards for Physical Therapy Practitioners, 1972; Canadian Physiotherapy Association Recommended Core Curriculum for Physiotherapy Education Programmes, 1982; Chartered Society for Physiotherapy Continuous Assessment Record Book, 1976).

This initial list was sorted and condensed into a list of 86 competencies by eliminating repetitive or similar competencies (Appendix A). The condensed list was analyzed by five physical therapists from diverse areas of clinical practice and education, who were asked to delete insignificant competencies, to reword competencies for clarity and meaning and to suggest any competencies that may have been overlooked. In view of their responses, the list was reduced further to a final 55 competency statements, which were then written in terms of the observable behaviors that a student must display to fulfill each competency. This final list of competencies was categorized into nine major competency areas, which define the domain of clinical competence: patient evaluation, program planning, implementation of the treatment program, communication with patient and family, communication with health care personnel, documentation, professional behavior, professional growth, and management related to direct patient care.

Questionnaire

The questionnaire listed the 55 competency statements and the nine major competency areas (Appendix B). The respondents were asked to rate the statements and areas on a 5-point scale according to how important that they felt each was to clinical practice in PT (non-

essential, minor importance, important, very important, essential). Two hundred questionnaires were sent to physical therapists who worked at clinical facilities in Edmonton offering clinical placements to UA students.

To determine the ratings of importance, the frequency of responses was calculated for each of the 55 competency statements and for each of the nine major competency areas. Two calculations were used as indicators of a rating of "high importance". The mean importance rating indicated the mean of the importance ratings given to each competence, and the percentage of importance was the percentage of respondents who scored a competency either "essential" or "very important".

The modal rating of importance was used as a weight for each competency and major competency area, so that the relative importance of these various competencies influenced the score awarded to a student. Use of weights made an overall assessment of clinical competence possible, such that, the student's score on each competency was multiplied by its respective weight before summing the total score over all competencies.

Construction of the Instrument

The two previous steps provided a plan, crucial for content validity, to ensure that all important competencies were included in the instrument. The ECC was designed for evaluation of fourth year PT students to monitor their progression toward clinical competence required for entry into the PT profession upon completion of their undergraduate program.

The ECC was planned in two sections (Appendix C). Section I contained the patient care competency areas: patient evaluation, program planning, implementation of the treatment program, communication with patient and family, communication with health care personnel and documentation. Section II contained professional competencies: professional behavior and professional growth. The content of each major competency area was delineated by its subcompetency statements. There were 48 subcompetencies in all.

Section I was designed as a behaviorally-anchored, 4-point rating scale to determine a final rating of clinical competence, which reflected habitual performance of patient care skills observed and recorded daily throughout the placement. There were 34 items in Section I. Section II was designed as a subjectively-worded 4-point rating scale to determine a final rating of the frequency with which professional competencies were demonstrated by the student in the final week of the placement. There were 14 items to be rated in Section II.

The next step was to decide the standards of performance by which to judge clinical performance of the subcompetencies in both Sections I and II of the ECC. Four standards were used and served as the anchorpoints on the rating scale descriptive of levels of performance ranging from incompetent to highly competent.

Under each subcompetency in Section I, the four standards of performance were described in behavioral terms to depict what a student must do to qualify for each standard: (1) incompetent, (2) minimally competent, (3) competent, and (4) highly competent. The four standards were worded behaviorally, as one means of striving for

higher reliability of the instrument. Incompetent performance standards were defined by the need for maximal assistance or correction by the preceptors to ensure an acceptable level of performance; minimally competent standards were defined by the need for minimal assistance or correction by the preceptors to ensure an acceptable level of performance. These low levels of performance were based on the amount of supervision given, in that, preceptors cannot allow poor performance to persist. Competent performance standards were characterized by independent performance with safety, effectiveness and proficiency in relation to more complex tasks or changing circumstances or problems. A "zero" option was also provided if performance was not observed by the preceptor or if the student was not required to perform a subcompetency.

The student's score on each subcompetency in Section I was judged by the standard (0,1,2,3,4) which best described the student's performance as observed by the preceptor. The format of Section I was a progressive format consisting of columns adjacent to the subcompetencies for recording the student's daily scores and the final score at the end of the placement. This formative evaluation told students and preceptors alike what subcompetencies were expected and to what standard of performance as well as how well the student had attained each subcompetency.

In Section II, the four standards of performance were subjectively worded to describe the frequency with which the student showed professional competencies: (1) occasionally, (2) inconsistently, (3) usually, and (4) always. Each standard was defined by the number of lapses in professional conduct that occurred in the final week of the

placement. The final week was selected to lessen preceptor error likely introduced by fading memory over a longer period of time. A student was scored as competent if the professional competencies were "usually" performed. A zero option was also provided, if performance was not observed.

The student's total score on the ECC (Section I and II) was obtained by summing the student's weighted score on each subcompetency, hence providing a summative evaluation of the student's overall level of performance.

In summary, Evaluation of Clinical Competence was constructed in two sections. Section I was a 4-point, behaviorally-anchored rating scale to determine the extent to which a PT student performed entry-level competencies as judged by specific standards of performance. This evaluation involved a daily record of performance to monitor habitual performance for the determination of a final rating. Section II was a 4-point, subjectively-worded rating scale to determine a final rating of the professional competencies displayed by the student.

Instructions to Administer the Instrument

The final stage in the instrument development phase was the formulation of instructions to administer the ECC. Precise instructions were documented in a directive to perceptors to ensure that administration conditions were uniform for all students (Appendix D). This step was done as a further attempt to improve the reliability of the instrument.

Section I and Section II of the ECC had separate instructions.

Instructions for Daily Ratings: Section I

Two preceptors observed and rated each student once daily from day 4 to day 17 of a placement, consisting of 20 days. A total of 14 daily ratings of student performance was possible with different patients and in different competency areas.

The two preceptors observed the student's performance for fifteen minutes each day. The first preceptor scheduled the daily observations at a time agreeable to the preceptors and the student. The onus was on all parties to be prepared for observation at the scheduled time. Preceptors observed the student performing in any one of the following activities: (1) patient evaluation, (2) patient treatment, (3) discussion of program planning, (4) team conferences or team interactions, and (5) reading student's documentation in patient charts. These methods of observation were varied from day to day by the first perceptor, so that each major competency area was observed a minimum of two times at different intervals throughout the placement. The selection of patients was also varied from day to day by the first preceptor, so that the student was observed with different types of patients over the placement. The student was free to refuse being observed with any patient that he or she did not consider appropriate.

The preceptors were instructed to observe the student together; however, if it was not feasible due to constraints of specialty units, such as intensive care, preceptors were allowed to make separate fifteen minute appointments to observe the student individually. In this way, daily observation and ratings could still be made. Guidelines documented ways to lessen the student's anxiety during these schedule observation times.

Immediately or as soon as possible after observing the student's performance, the two preceptors independently rated the student's performance on all relevant subcompetencies in Section I of the ECC. No joint discussion or joint decisions were made by the two preceptors during either the observation or rating of the student's performance. Each preceptor independently chose the standard of performance (0,1,2,3,4) from the choices provided under each subcompetency which best described the student's performance on the subcompetency. When choosing a standard, the preceptors were asked to base his or her decision on the definition of terms provided on page one of the instrument. Adjacent to each subcompetency, the preceptor wrote the number representing the standard of performance that was chosen. This number was written in the column corresponding to the day of the evaluation. If observations by preceptors were conducted separately, this condition was indicated by circling the "s" (separate) at the top of the same column as the daily rating.

Instructions for Final Ratings: Section I

Final ratings were completed anytime between day 18 and 20. The preceptors independently reviewed the student's daily ratings and then independently chose a rating which best described the student's overall performance in each subcompetency. This number was written in the column corresponding to day 20.

Instructions for Final Ratings: Section II

Final ratings were completed along with Section I of the ECC anytime between day 18 and day 20. The preceptors independently considered only the final week of the placement to rate the frequency with which professional subcompetencies were demonstrated by the

student and placed a check mark in the appropriate column (not observed, occasionally, inconsistently, usually and always).

Instrument Validation Phase

Informed Consent

The supervisors of all the physical therapy departments in Edmonton providing clinical placements to PT students from the UA were contacted by a letter informing them of the study and requesting their participation. All consented to participate in the study. The six departments outside Edmonton offering placements were also contacted, and consent was obtained from four of them. The supervisors from these four physical therapy departments outside Edmonton obtained consent from the two therapists in their respective departments who would be supervising the student. A followup visit to each department in Edmonton agreeing to participate in the study was made in August 1982 to explain the evaluation instrument and its instructions to the physical therapists responsible for supervision of the students. Consent was solicited and obtained from all the therapists that would be involved.

In September 1982, the PT students were informed as to the nature of the study and their consent to participate was obtained. Thirty-two fourth year students (n=35) agreed to participate; 23 third year students (n=35) agreed to participate. Students were told that the information gathered by the ECC would not be used to determine a grade in their practicum courses; the existing evaluation form would be completed concurrently and utilized for grading purposes.

Moreover, they were informed that they could withdraw from participation at any time during the study. Results from the revised evaluation would be mailed to students, if so requested (Appendix E).

Pilot Testing of the Evaluation of Clinical Competence

In September 1982, the ECC was tested on four fourth year PT students at the UA Hospital to ascertain the feasibility of the instrument, administration procedures and instructions prior to the validation studies. Some ambiguous subcompetencies and standards were identified and revised. Instructions to preceptors were modified to allow the separate observations by preceptors in special instances, e.g. intensive care, and to include the suggestions on how to ease the student's anxiety during the scheduled observations by two preceptors.

Validation Studies of the Evaluation of Clinical Competence

To validate this newly-designed instrument, three steps were followed. First, the administration procedures for the validation studies were established. Second, the ECC was administered to fourth year PT students (n=29) during their clinical placement in November 1982 according to the specified instructions to obtain data by which to analyze and revise the evaluation instrument. Third, the revised ECC was administered to third year PT students (n=23) and fourth year PT students (n=25) during their clinical placements in February and March 1983. The same instructions were followed in order to collect data necessary to establish inter-rater reliability, concurrent validity and construct validity of the instrument.

Administration Procedures

Third and fourth year PT students were observed and rated during each clinical placement by two preceptors who were assigned to the students by the Clinical Instructor in each clinical facility. The first preceptor was the therapist normally assigned to supervise the student throughout the placement. The second preceptor was a clinical instructor, team supervisor or another staff therapist working in close proximity and in the same specialty area who was not assigned another student in the same year to supervise directly.

Both preceptors evaluated the third and fourth year PT students using two evaluations: (1) the Evaluation of Clinical Competence, and (2) the Hiring Rating. The Hiring Rating indicated the preceptor's willingness to employ the student, as a measure of concurrent validity (Appendix F). Further to these two evaluations, a narrative clinical evaluation used by the Department of Physical Therapy at the UA, was completed concurrently to grade the student's clinical experience for the practicum courses (Appendix G). This additional evaluation was completed by the first preceptor only.

At the end of the placement, the first and second preceptors independently determined final ratings on their respective evaluations, in accordance with a preassigned counterbalanced sequence so as to avoid any sequence bias (Appendix H). Furthermore, to ensure that information from one evaluation did not unjustifiably influence the information on another evaluation, preceptors were told to completely finish one evaluation before proceeding to the next. Preceptors were warned not to refer to an earlier evaluation nor to change an evaluation once completed. The instructions by which to complete the three

evaluations were clearly documented (Appendix D) and were explained to the preceptors by the investigator in a one hour training session prior to the commencement of each placement in the validation study.

Evaluation and Revision of the Instrument

The ECC was administered to 32 fourth year PT students during their twelfth clinical placement in November 1982. The results for three students were excluded, because two preceptors could not be provided. The data collected were analyzed to evaluate how consistently the first edition of the instrument measured clinical competence; thereafter, revisions were made to improve its performance.

To identify inconsistent subcompetencies (items) the final ratings awarded to each student by the two preceptors were analyzed. Crosstabulation tables were drawn for each item using the Statistical Package for Social Sciences (SPSS). For each item, the percentage agreement between the two preceptors was calculated, and the discrepant ratings responsible for disagreement were located. Inconsistent items were deleted, and those retained were reworded or refined in light of the crosstabulation results.

Validation of the Revised Instrument

The revised ECC (Appendix I) was administered under the same administrative conditions on two occasions in February and March, 1983: (1) with 23 third year PT students in their fifth clinical placement, and (2) with 30 fourth year PT students in their fifteenth and final clinical placement. In the fourth year group, results for five students were excluded, because two preceptors could not be provided in certain clinical facilities. The data collected were analyzed to determine the inter-rater reliability and validity of the

revised instrument with these two groups of students.

To establish inter-rater reliability of the ECC, the final ratings awarded to each student by the two preceptors were analyzed. Again, crosstabulation tables were used to calculate the percentage of agreement between preceptors and to locate rating cells with a high percentage of disagreement. Kappa coefficients were also computed from the crosstabulation tables.

Cohen (1960) presented a Kappa coefficient to measure the degree of agreement between two judges for nominal scales. He argued that use of χ^2 is inappropriate for evaluation of agreement. A significant χ^2 signifies departure from chance association, be it disagreement or agreement. A Kappa coefficient is the proportion of agreement after chance agreement is removed from consideration:

$$k = (po - pc)/(1 - pc) \text{ where}$$

po equals the proportion of units in which judges agree; and

pc equals the proportion of units for which agreement is expected by chance

The daily ratings per se were not used in the analysis of the data. Information regarding the student's competence was accumulated daily to be used by the preceptors for determining the final rating indicative of the student's habitual performance throughout the clinical placement.

The students' final raw scores were transformed using the modal weights to produce for each student a total scale score and seven subscale scores for each of the major competency areas. Intraclass correlations, derived by one-way analysis of variance with repeated measures, were calculated to determine the reliability of the total

scale score and seven subscale scores awarded by the two preceptors.

To determine concurrent validity of the ECC, it was predicted that students who rated highly on the ECC would also tend to rate highly on the criterion variables of potential employability and of student performance by a narrative evaluation method. Concurrent validity coefficients were Pearson product-moment correlations between the total ECC scores and the hiring scores and correlations between the total ECC scores and the score on the narrative evaluation.

To ascertain whether the ECC actually measured the underlying construct of clinical competence, construct validity was tested by predicting that experienced students perform better than novice students. One-way analysis of variance was used to determine if there was a significant difference between the final scale score received by the experienced fourth year students and the final scale scores received by the novice third year students.

Immediately following completion of the validation study, both preceptors and students were asked to complete a short questionnaire about their feelings toward the ECC, its advantages and disadvantages (Appendix J). The frequency of responses was calculated for students and preceptors separately to gauge their acceptance of the ECC.

Chapter IV

RESULTS

Instrument Development Phase

The total number of replies to the questionnaire regarding the importance of clinical competencies in physical therapy was 121 or 60.5%.

The importance placed on each of the nine major competency areas is demonstrated in Table 1 by their ranking according to the mean importance rating. The four highest ranking clinical competencies, namely patient evaluation, implementation of treatment, program planning and communication with patient/family had mean importance ratings between 4.79 and 4.08, out of a possible 5.00. The five lowest ranking clinical competency areas included documentation, communication with health care personnel, professional behavior, professional growth and mangement related to direct patient care with mean importance ratings ranging from 3.97 to 3.54, out of a possible 5.00.

The importance of the subcompetencies under each of the major competency areas portrays the priorities espoused by members of the PT profession. Each major competency area is considered in turn.

The patient evaluation area, consisting of nine subcompetencies or items related to initial patient evaluation and re-evaluation procedures, was ranked the highest in importance with mean importance ratings ranging from 3.78 to 4.55. More than 68% of the respondents scored eight items highly important; however, only 63% considered

Table 1

Importance Ratings of Physical Therapy Competencies

Major Competency Areas Ranked from High to Low	No. of Items	Competency Means	Range of Subcompetency Means	Means of % Importance
patient evaluation	9	4.79	3.78 - 4.55	77.9
implementation of treatment	9	4.60	3.26 - 4.65	74.4
program planning	8	4.53	3.65 - 4.56	80.4
communication with patient and family	6	4.08	3.71 - 4.16	72.3
documentation	3	3.97	3.78 - 4.22	71.6
communication with other health care personnel	5	3.94	3.51 - 4.57	72.7
professional behavior	6	3.92	3.79 - 4.28	70.5
professional growth	5	3.85	3.44 - 4.27	67.6
management related to direct patient care	4	3.54	3.34 - 4.03	55.2

Note: n=121

explanation of evaluation procedures and findings to the patient/family to be highly important. The most highly valued items involved selection of PT evaluation procedures and effective performance of an evaluation at 93% and 92%, respectively.

The program planning area, with its eight items pertaining to planning treatment services, was ranked third in importance with mean importance ratings between 3.65 and 4.56. Although six items were rated highly important by 80% of the respondents, only 55% considered inclusion of the patient/family in some of the planning process to be highly important. By contrast, the most highly valued item was identification of primary problems in priority at 93%.

The implementation of treatment area included nine items, related to treatment skills and judgements, and ranked second in importance with mean importance ratings ranging from 3.26 to 4.65. Only two items did not receive highly important ratings by 65% of the respondents: preparation, care and tidiness of equipment and treatment area at 41% and organization of patient schedule at 52%. The most highly valued items were effective performance of a treatment and adherence to all safety precautions both at 93%.

The communication with patient/family area, consisting of six items related to communication skills and interpersonal relations, ranked fourth in importance with mean importance ratings between 3.71 and 4.16. All items were viewed as highly important by 71% to 79% of the respondents, except one item which pertains to education of the patient/family regarding patient's status and PT treatment, was viewed as highly important by 61%.

The communication with health care personnel area, with its five

items, ranked sixth in importance with mean importance ratings ranging from 3.51 to 4.57. The most highly valued item was confidentiality of patient information at 87% and the least valued item was assisting other personnel implement aspects of the patient's PT treatment at 53%.

The documentation area was comprised of three items and ranked fifth with mean importance ratings from 3.78 to 4.22. The items referring to content of the initial evaluation and progress notes received 79% and 78% highly important rating respectively; whereas, documentation of statistical and patient records according to the format and time limits of the facility received only a 58% highly important rating.

The professional behavior area included six items covering professional qualities that enhance working relations. It ranked seventh in importance with mean importance ratings ranging from 3.79 to 4.28. High ratings were given to items related to accepting responsibility at 85% and assisting and cooperating with co-workers at 76%. Low ratings of 61% were given to both presenting a professional appearance and handling frustrations appropriately.

The professional growth area involved five items characteristic of qualities that promote continuing clinical competence. It ranked eighth in importance with mean importance ratings ranging from 3.44 to 4.27. Only the item on interpretation and utilization of research results was the rating of importance less than 62% of respondents.

Management related to direct patient care, composed of four items dealing with administrative roles for the provision of patient care, ranked the least important with mean importance ratings between 3.34 and 4.03. The highly rated item was collaboration with other

disciplines involved in the patient care team at 74%. The low items were supervision of support PT personnel at 41% and adherence to operational procedures at 45%.

In light of the questionnaire results, the list of 55 subcompetencies was reduced to 48 subcompetencies for inclusion in the evaluation instrument. The management competency area was deleted, and its one important item on collaboration with other disciplines was incorporated into communication with health care personnel.

The weights attached to each subcompetency were the modal rating of importance received by each subcompetency in the questionnaire. These weights, which reflect the relative importance of the subcompetency, are presented as part of Table 3, which will be described in more detail in the next section.

Instrument Validation Phase

Evaluation of the Instrument

To assess how consistently the new instrument measured clinical competence of 29 fourth year PT students in November 1982, the ratings were analyzed to determine which subcompetencies had high agreement among preceptors and which had low agreement among preceptors.

In the analysis, the percentage agreement was calculated when the "not observed" rating was removed from the data to give an indication of agreement when a subcompetency was actually observed and rated by the preceptors. A pattern of agreement of the 48 subcompetencies or items is demonstrated by their ranking according to the percentage of agreement results. Table 2 indicates for each item

Table 2

Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Evaluation of Clinical Competence with Fourth Year PT Students

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
19	tidies treatment area	8	90.5	F	9.5
4	selects evaluation procedures	0	75.9	F	20.7
24	educates patients	5	75.0	F	20.8
22	uses body mechanics	3	73.1a	F	19.2
37	presents professional appearance	0	72.4	F	27.6
23	prepares for discharge	22	71.4	D/F	14.3
28	develops rapport with patient	8	71.4	F	23.8
1	uses knowledge for evaluation	4	68.0	F	20.0
6	evaluates patient's equipment	23	67.3a	F	33.3
42	asks questions	3	65.4	F	19.2
2	gathers data from chart	9	65.0	F	15.0
26	instructs patient/family	1	64.3	F	14.3
30	communicates orally	5	62.5	F	33.3
36	maintains confidentiality	5	62.5	F	33.3
8	re-evaluates	19	60.0a	D/F	20.0
5	evaluates skillfully	0	58.6	F	27.7
27	motivates patient	3	57.7	F	23.1
3	conducts patient interview	8	57.1	F	23.8
9	uses knowledge for planning	2	55.6	D	22.2
16	treats skillfully	0	55.2	F	34.5
17	observes skillfully	0	55.2	F	24.1
20	schedules patient load	9	55.0	F	25.0
14	justifies treatment plan	3	53.8	D	26.9
15	involves patient in planning	16	53.8a	D	23.1
18	modifies/progresses treatment	3	53.8	D	23.1
44	identifies own strengths and weaknesses	16	53.8	F	23.1
46	seeks resources to increase knowledge	16	53.8	D	38.5
39	documents to format	3	53.8a	F	11.5
25	approaches to patient	1	53.6a	F	28.6
29	assists patient implement own treatment	12	52.9	D	29.4

Table 2 (continued)

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
34	records progress notes	4	52.0	F	24.0
40	shows reliability	2	51.9	F	29.6
10	identifies primary problem	0	51.7	F	31.0
7	eases patient apprehension	3	50.0	D	23.1
12	determines treatment goals	3	50.0	F	23.1
31	develops rapport with team	11	50.0	F	33.3
43	modifies behavior to meet suggestions	1	50.0	F	35.7
45	use self-evaluation	17	50.0	F	25.0
35	accepts responsibility	3	50.0a	F	30.8
41	handles frustration appropriately	7	50.0a	F	36.4
48	displays interests	1	46.4	F	32.1
11	identifies secondary problems	3	46.2	D	26.9
38	assumes appropriate PT roles	2	44.4	F	40.7
33	records initial evaluation	4	40.0	F	28.0
13	selects treatment procedures	1	35.7	D	39.3
21	adheres to safety	1	28.6	F	42.9
32	assists others implement patient treatment	25	25.0	E	50.0
47	utilizes research results	24	20.0a	D	80.0

Note: n=29

[a] items deleted in revised edition of the instrument

the number of times the, "Not Observed", rating was used, the percentage of agreement, and discrepant ratings pairs contributing most to percentage disagreement among preceptors.

The percentage agreement of the 48 items in the ECC ranged from 90.5% to 20%. The mean percentage agreement of all items in the instrument was 54.3% and the median value was 53.8%. The not observed rating was used more than half of the time in nine items: 22, 6, 8, 15, 44, 46, 45, 32 and 47.

Cells in the crosstabulation tables were also scrutinized to determine which discrepant ratings pairs contributed to the percentage disagreement among the preceptors. Findings confirm the prediction that the percentage of disagreement was low in cells spanning crucial ratings, namely between incompetence (1) and minimally competent ratings (2) (cell A), between incompetent (1) and competent ratings (3) (cell B), between incompetent (1) and highly competent ratings (4) (cell C), between minimally competent (2) and competent ratings (3) (cell D) and between minimally competent (2) and highly competent ratings (4) (cell E). By contrast, the percentage disagreement was predicted to be high between competent (3) and highly competent ratings (4) (cell F) which do not span crucial ratings. Table 2 illustrates that cell F, in fact, contributed largely to the percentage disagreement.

When discrepant rating pairs exist, the first preceptors tended to give higher ratings than the second preceptors on 28 items. On seven items, there was no tendency to give higher or lower ratings by either the first or second preceptors. On the remaining 13 items, the first preceptors tended to give lower ratings than the second

preceptors. Interesting, six of the latter items were related to the professional subcompetencies.

Since the main purpose of the ECC was directed toward discriminating between incompetence and competent performances, disagreement between competent and highly competent ratings (cell F) is not considered a serious discrepancy. Consequently, competent (3) and highly competent (4) ratings which are both representative of competence, albeit one being more commendable than the other, were treated as one rating indicative of competence. Table 3 presents the percentage of agreement for the 48 subcompetencies by major competency areas when 3 and 4 ratings were collapsed into one rating. In addition, percentage agreement for the major competency areas is shown.

The resultant higher percentages of agreement illustrate gain made when a 4-point rating scale is reduced to a 3-point rating scale. The mean percentage agreement for the entire instrument was 78.4% with percentage agreement for the items ranging from 100% to 20%.

The students' raw scores were transformed using the weights specified in Table 3. Each student received a total scale score and eight subscale scores for each major competency area. Table 4 presents the intraclass coefficients for the total score and the eight subscale scores along with their F scores and probability levels.

The mean of the students' total scale scores was 3.13 for preceptor 1 and 3.05 for preceptor 2, out of a possible 4.00 [$F(1,28) = 1.56$ $p = .22$]. The total scale scores ranged between 2.2 and 3.9. Only the subscale scores for the patient evaluation area showed a significant difference between the two preceptors, indicative of poor agreement. Reliabilities in Table 4 show moderate agreement among

Table 3

Percentage Agreement Among Preceptors on a 3-point Scale for the Evaluation of Clinical Competence with Fourth Year PT Students

Item	Weight	% Agreement (3-point scale)	Item	Weight	% Agreement (3-point scale)
	Patient Evaluation			Implementation Treatment	
1	3	88.0	16	3	89.7
2	2	80.0	17	3	79.3
3	3	81.0	18	3	65.4
4	3	96.6	19	1	100.0
5	3	86.2	20	1	80.0
6a	2	100.0	21	3	71.4
7	2	69.2	22a	2	92.3
8a	3	80.0	23	2	85.7
		$\bar{X}$ = 85.1			$\bar{X}$ = 83.0
	Program Planning			Communication with Patient/Family	
9	3	74.1	24	2	95.8
10	3	82.8	25a	3	78.6
11	2	57.7	26	2	80.8
12	2	73.1	27	2	80.8
13	3	46.4	28	2	95.2
14	2	69.2	29	2	70.6
15a	1	69.2			
		$\bar{X}$ = 67.5			$\bar{X}$ = 83.6

Table 3 (continued)

Item	Weight	% Agreement (3-point scale)	Item	Weight	% Agreement (3-point scale)
Communcation with Health Care Professional			Documentation		
30	2	95.8	33	3	68.0
31	2	83.3	34	3	76.0
32	2	25.0			
		$\bar{X}$ = 68.0			$\bar{X}$ = 72.0
Professional Behavior			Professional Growth		
35a	3	80.8	42	3	84.6
36	3	95.8	43	2	85.7
37	2	100.0	44	2	76.9
38	2	85.2	45	2	75.0
39a	1	92.3	46	2	53.8
40	2	81.5	47a	1	20.0
41a	2	86.4	48	3	78.6
		$\bar{X}$ = 88.9			$\bar{X}$ = 67.8

Note: n=29

[a] items deleted in revised edition of the instrument

Table 4

Intraclass Coefficients and Results of One-Way Analysis of Variance with Repeated Measures for the Total Scale Score and Subscale Scores on the Evaluation of Clinical Competence with Fourth Year PT Students

Scores	Fourth Year Intraclass Coefficents[a]	F	P
patient evaluation	.628	4.27	.05
program planning	.610	.04	.84
implementation of treatment	.554	1.34	.26
communication patient/family	.401	2.88	.10
communication health care personnel	.778	.93	.34
documentation	.723	1.62	.21
professional behavior	.291	.22	.64
professional growth	.660	.01	.91
total scale score	.704	1.56	.22

Note: n=29

[a] adjusted reliability values used

preceptors.

Nine items were deleted from the first edition of the ECC. Items 6, 8, 15 and 47 were dropped because they could not be observed on a regular basis in the clinical setting. Items 22, 39 and 41 were deleted because their omission did not jeopardize content validity, in that, questionnaire results did not reveal them to be highly important. Items 25 and 35 were deleted because the percentage agreement was low, likely due to the fact that specific behavior exemplifying these subcompetencies was not stated. Although some of the remaining items had low percentage agreement, they were retained to secure content validity. For example, items 33, 13 and 21 were highly important subcompetencies, hence crucial behaviors for measuring the domain of clinical competence in PT. Items with low percentage agreement were carefully reworded in order to clarify the description of the behaviors to be exhibited by students, particularly between those standards of behavior where disagreement was prevalent. The better items were refined in light of the suggestions offered by both the preceptors and students as well as in light of disagreement results.

Moreover, the ECC was streamlined to seven major competency areas by consolidating the two professional competency areas in Section II into one major area called "professional behavior". One new item (item 18) was added to enhance content validity. A number of preceptors suggested that a subcompetency covering respect for the dignity of the patient had been overlooked. The total number of items in the revised instrument was 40.

Validation of the Revised Instrument

Fourth Year Physical Therapy Students

Scores on the revised edition of the Evaluation of Clinical Competence for each group of students studied - experienced fourth year PT students and novice third year PT students - were analyzed to assist in determining the reliability and validity of the instrument.

To determine the inter-rater reliability of the revised ECC with fourth year PT students, the percentage agreement among preceptors (when the not observed rating was removed from the data) was tabulated for each of the 40 subcompetencies or items and for the entire instrument. The pattern of agreement among the preceptors on the 40 items is demonstrated by their ranking according to the percentage agreement results. Table 5 indicates for each item the number of times the, "Not Observed", rating was used, the percentage agreement, and discrepant pairs of ratings contributing most to the percentage disagreement among the preceptors.

The percentage agreement for all subcompetencies ranged from 80% to 31.8%. The mean percentage agreement for the total instrument was 55.6%, and the median value was 57.1%. The not observed rating was used more than half of the time for two items, 19 and 28, which were also in this same troublesome category in the first edition of the ECC.

Percentage agreement of items on the first edition and the revised edition was compared. Items which persisted to have a low percentage of agreement pertain to displaying interest in the specialty, identifying secondary problems, recording the initial evaluation and adhering to safety precuations, all of which are extremely important to the practice of physical therapy. Items

Table 5

Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Revised Evaluation of Clinical Competence with Fourth Year PT Students

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
16	tidies treatment area	5	80.0	F	15.0
28	assists others implement aspects of patient treatment	20	80.0	F	20.0
14	observes skillfully	1	79.2	F	16.7
30	records progress notes	5	70.0	D/E/F	10.0
13	treats skillfully	0	68.0	F	20.0
19	prepares patient for discharge	22	66.7	C	33.3
27	communicates orally	7	66.7	F	22.2
12	justifies treatment plan	2	65.2	B	13.0
31	maintains confidentiality	5	65.0	F	30.0
38	identifies own strengths and weaknesses	5	65.0	F	25.0
3	conducts patient interview	8	64.7	D/F	17.6
20	educates patient/family	8	64.7	D	17.6
18	ensures dignity of patient	7	61.1	F	38.9
35	assumes appropriate PT roles	2	60.9	F	26.1
7	uses knowledge for planning	1	58.3	D	25.0
5	evaluates skillfully	1	58.3	E	20.8
11	selects treatment procedures	1	58.3	F	16.7
22	motivates patient/family	1	58.3	F	33.3
37	modifies beavhior to meet suggestions	6	57.9	F	26.3
25	schedules patient load	11	57.1	F	35.7
36	asks questions	4	57.1	F	28.6
10	determines treatment goals	2	56.5	F	17.4
1	uses knowledge for evaluating	5	55.0	F	20.0
21	instructs patient/family	1	54.2	F	33.3
26	develops rapport with others	6	52.6	F	42.1
4	selects evaluation procedures	1	50.0	D	29.2
6	eases patient's apprehension	3	50.0	F	40.9
24	assists patient implement own treatment	11	50.0	F	28.6
29	records initial evaluation	0	48.0	F	20.0
32	is reliable	2	47.8	F	47.8

Table 5 (continued)

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
17	ensures safety	0	44.0	F	40.0
23	develops rapport with patient	2	43.5	F	39.1
33	presents professional appearance	2	43.5	F	43.5
39	uses self-assessment to improve	8	41.2	F	35.3
15	modifies/progresses treatment	3	40.9	F	36.4
9	identifies secondary problem	4	38.1	D	23.8
2	gathers data from patient chart	9	37.5	F	37.5
8	identifies primary problems	1	37.5	F	37.5
40	seeks resources to increase knowledge	9	37.5	F	31.3
34	displays interest	3	31.8	F	40.9

Note: n=25

continuing to show a high percentage agreement were related to preparing the patient for discharge, educating the patient/family, maintaining confidentiality and tidying the treatment area.

Table 6 also presents the Kappa coefficient for each item. The median Kappa coefficient was .32. Even though Kappa coefficients demonstrate only fair agreement between preceptors, 27 items showed significance at or below the .05 probability level.

Cells in the crosstabulation tables were surveyed to determine which discrepant rating pairs contributed to the percentage disagreement among the preceptors. In line with expectations, results verified that the percentage disagreement was indeed low in cells A (1-2 rating pair), B (1-3 rating pair), C (1-4 rating pair), D (2-3 rating pair) and E (2-4 rating pair), where rating pairs cross critical ratings. Furthermore, percentage disagreement was high in cell F (3-4 rating pair), which was expected particularly in this final clinical placement prior to graduation when the vast majority of students should achieve a competent standard of performance. Table 5 does, in fact, illustrate that cell F contributed highly to the percentage disagreement.

Disagreement attributable to cell F was highest among the items under the major competency areas of professional behavior and communication with patient/family. The mean number of F cell rating pairs for these items is 6.9 and 6.2 respectively. By contrast, the mean number of D cell rating pairs was highest for items under program planning at 3.7 and documentation at 3.0. When the discrepant pairs in the remaining cells (A, B, C and E) were considered together and averaged, the items under program planning and documentation were

Table 6

Kappa Coefficients Among Preceptors for each Subcompetency in the Revised Evaluation of Clinical Competence with Fourth and Third Year PT Students

Item	4th Year Kappa Coefficient	3rd Year Kappa Coefficient	Item	4th Year Kappa Coefficient	3rd Year Kappa Coefficient
1	.353**	.068	21	.198	.270**
2	.226**	.501**	22	.324*	.319**
3	.448**	.812**	23	.010	.319*
4	.188	.170	24	.342**	.528**
5	.286*	.283	25	.478**	.588**
6	.234*	.285	26	.269*	.537**
7	.356**	.319*	27	.420**	.241**
8	.023	.083	28	.782**	.495**
9	.183*	.095	29	.207	.287**
10	.359**	.306*	30	.570**	.398**
11	.274	.259	31	.347*	.361**
12	.314	.376*	32	.111	0.
13	.506**	.443**	33	-.003	.33
14	.616**	.186	34	-.038	.299*
15	.105	.467**	35	.299*	.163
16	.549**	.55**	36	.330**	.194
17	.168	-.079	37	.371**	.047
18	.387**	.394**	38	.457**	.544**
19	.664**	.658**	39	.130	.466**
20	.462**	.344**	40	.182*	.251**

* $p \leq .05$
** $p \leq .01$

again highest at 3.3 and 3.0 respectively. Where discrepant rating pairs exist, there was no apparent trend whereby the first preceptors consistently chose the higher or lower rating of the pair.

Since disagreement was largely attributed to 3-4 rating pairs (cell F), both of which measure competence at acceptable levels, these ratings were therefore treated as one competency rating. The percentage agreement was retabulated for the resultant 3-point scale.

Table 7 presents the percentage agreement of the 3-point scale for the 40 items by the major competency areas and their ranking from high to low percentage agreement. The mean percentage agreement for the total instrument using a 3-point scale improved considerably to 81.7% with the percentage agreement of items ranging from 100% to 52.4%.

Items which showed a high percentage agreement (greater than 90% agreement), listed in order were those dealing with ensuring dignity of the patient, assisting health care personnel implement aspects of PT treatment, observing skillfully, being reliable, respecting confidentiality, developing rapport with team members, scheduling patient load, motivating patients/family, easing patient's apprehension and identifying own strengths and weaknesses. Items which showed a low percentage agreement (less than 70% agreement), listed from the lowest to highest values, were those related to identifying secondary problems, selecting evaluation procedures, using knowledge for treatment planning, preparing patient for discharge, recording the initial evaluation and displaying interest in the speciality.

A general impression of agreement is obtained by looking at the

Table 7

Percentage Agreement Among Preceptors on a 3-point Scale for the Revised Evaluation of Clinical Competence with Fourth Year and Third Year PT Students

Item	Weight	Fourth Year % Agreement (3-point scale)	Rank	Third Year % Agreement (3-point scale)	Rank
		Patient Evaluation			
1	3	75.0	23	36.8	31
2	2	75.0	23	83.3	10
3	3	82.4	18	88.2	5
4	3	66.7	29	52.2	28
5	3	70.8	26	65.2	22
6	2	90.9	8	73.7	17
		$\bar{X}$ = 76.8	5	$\bar{X}$ = 66.6	4
		Program Planning			
7	3	66.7	29	63.6	24
8	3	75.0	23	65.2	22
9	2	52.4	30	41.2	30
10	2	73.9	24	60.0	26
11	3	75.0	23	60.9	25
12	2	73.9	24	63.6	24
		$\bar{X}$ = 69.5	7	$\bar{X}$ = 59.1	6
		Implementation of Treatment			
13	3	88.0	11	76.2	15
14	3	95.8	2	76.2	15
15	3	77.3	21	68.4	20
16	1	95.0	4	75.0	16
17	3	84.0	16	71.4	18
18	3	100.0	1	85.0	9
19	2	66.7	29	100.0	1
		$\bar{X}$ = 86.7	2	$\bar{X}$ = 78.9	2

Table 7 (continued)

Item	Weight	Fourth Year % Agreement (3-point scale)	Rank	Third Year % Agreement (3-point scale)	Rank
		Communication with Patient/Family			
20	2	76.5	22	60.0	26
21	2	87.5	12	60.9	25
22	2	91.7	7	68.2	21
23	2	82.6	17	81.0	12
24	2	78.6	20	60.0	26
		$\bar{X}$ = 83.4	4	$\bar{X}$ = 66.0	7
		Communication with Health Care Personnel			
25	1	92.9	6	75.0	16
26	2	94.7	5	85.7	8
27	2	88.9	10	58.8	27
28	2	100.00	1	50.0	29
		$\bar{X}$ = 94.1	1	$\bar{X}$ = 67.4	5
		Documentation			
29	3	68.0	28	65.0	23
30	3	80.0	19	78.9	13
		$\bar{X}$ = 74.0	6	$\bar{X}$ = 72.0	3

Table 7 (continued)

Item	Weight	Fourth Year % Agreement (3-point scale)	Rank	Third Year % Agreement (3-point scale)	Rank
		Professional Behavior			
31	3	95.0	4	94.1	2
32	2	95.7	3	90.9	4
33	2	87.0	13	91.3	3
34	3	72.7	25	86.4	7
35	2	87.0	13	81.0	12
36	3	85.7	14	81.0	12
37	2	84.2	15	87.0	6
38	2	90.6	9	81.8	11
39	2	76.5	22	77.8	14
40	2	68.8	27	69.2	19
		$\bar{X}$ = 84.3	3	$\bar{X}$ = 84.1	1

mean percentage agreement within the major competency areas and their rankings in Table 7. Items dealing with communication with health care personnel and implementation of treatment, tended to show the highest percentage agreement among the preceptors and were followed closely by items related to professional behavior and communication with patient/family. Whereas, items pertaining to program planning, documentation and patient evaluation tended to show the lowest agreement among the preceptors.

The means of students' raw scores for each of the 40 items ranged from 3.80 to .52, out of a possible of 4.00. Although the first preceptors tended to have higher means and less variance than the second preceptors, there was a significant difference between the means for only five items: 19, 28, 31, 36 and 38.

The students' raw scores were transformed using weights (Table 7) to produce for each student a total scale score and seven subscale scores for each of the major competency areas. Table 8 presents the intraclass coefficients for the total scale score and the seven subscale scores along with their F values and probability levels. The reliability of the ECC was .591 for fourth year PT students.

The total scale scores ranged from 4.00 to 2.23 with a mean scale score of 3.22 by the first preceptors and with a mean scale score of 3.19 by the second preceptor. Although the second preceptor tended to give a greater variation of scores, there was not a significant difference between the mean scale scores given by the two preceptors ($p = .74$).

Results indicate that concurrent validity of the ECC was substantial. Table 9 shows correlations between the ECC total scores

Table 8

Intraclass Coefficients and Results of One-Way Analysis of Variance with Repeated Measures for the Total Score and Subscale Scores on the Revised Evaluation of Clinical Competence with Fourth and Third Year PT Students

	Fourth Year[a]			Third Year[b]		
	Intraclass[c] Coefficients	F (1,24)	P	Intraclass[c] Coefficients	F (1,22)	P
patient evaluation	-	.0	1.00	.566	.03	.86
program planning	.543	.02	.89	.451	.02	.88
implementation of treatment	.607	.04	.85	.403	.03	.86
communication patient/family	.286	.16	.70	.317	.68	.42
communication health care personnel	.336	.81	.38	.521	.20	.66
documentation	.203	1.81	.29	.308	.13	.72
professional behavior	.092	2.71	.11	.257	.66	.42
total scale score	.591	.11	.74	.624	.70	.41

a n=25

b n=23

c adjusted reliability values used

Table 9

Correlation[a] of Total Scale Scores on the Revised Evaluation of Clinical Competence with Hiring Ratings and UA Performance Scores for the Fourth Year PT Students[b]

	Hiring Ratings		UA Scores
	Preceptor 1	Preceptor 2	Preceptor 1 only
Total ECC Scores			
Preceptor 1	.597	-	.493
Preceptor 2	-	.655	-

a Pearson product-moment correlations

b n=25

and (1) preceptor hiring ratings, and (2) UA performance scores. The hiring rating form demonstrated good reliability with fourth year PT students over the two preceptors at .842.

Validation of the Revised Instrument

Third Year Physical Therapy Students

To determine the inter-rater reliability of the revised ECC with third year PT students, the percentage agreement among the preceptors (when the not observed rating was removed from the data) was tabulated for each of the 40 subcompetencies and for the entire instrument. The pattern of agreement among the preceptors on the 40 item is demonstrated by their ranking according to the percentage agreement results. Table 10 indicates for each subcompetency the number of times the not observed rating was used, the percentages of agreement and discrepant pairs of rating contributing most to the percentage disagreement among the preceptors.

The percentage agreement for all items ranged from 88.2% to 33.3%. The mean percentage agreement for the entire instrument was 54.8% and the median was 56.4%. The not observed rating was used more than half of the time for seven items: 19, 24, 25, 26, 28, 38 and 39. Only items 19 and 28 were also in this same category for fourth year students.

Percentage agreement of fourth year students and third year students was compared. Items with high percentages of agreement common to both groups of students were items 18, 3, 38, 12, 19, 13, 16. Items with low percentages of agreement common to both groups of students were items 17, 9, 8, 40.

Table 10

Subcompetencies Ranked by Percentage Agreement Among Preceptors on the Revised Evaluation of Clinical Competence with Third Year PT Students

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
3	conducts patient interview	6	88.2	D	11.8
33	presents professional appearance	0	73.9	F	17.4
13	treats skillfully	2	66.7	D	23.8
16	tidies treatment area	11	66.7	E	16.7
19	prepares patient for discharge	20	66.7	F	33.3
38	identifies own strengths and weaknesses	12	63.6	F	18.2
12	justifies treatment plan	1	63.6	D	27.3
15	modifies/progresses treatment	4	63.2	D	15.8
25	schedules patient load	15	62.5	B/E/F	12.5
5	evaluates skillfully	0	60.9	D	30.4
11	selects treatment procedures	0	60.9	D	30.4
24	assists patient implement own treatment	13	60.0	D	30.0
18	ensures patient dignity	3	60.0	F	25.0
7	uses knowledge for planning	1	59.1	D	27.3
31	maintains confidentiality	6	58.8	F	35.3
2	gathers data from patient chart	11	58.0	F	25.0
30	records progress notes	4	57.9	F	21.1
26	develops rapport with others	16	57.1	F	28.6
14	observes skillfully	2	57.1	D/F	19.0
23	develops rapport with patients	2	57.1	F	23.8
39	uses self-evaluation to improve	14	55.6	F	22.2
10	determines treat goals	3	55.0	D	30.0
34	displays interest	1	54.5	F	31.8
6	eases patient's apprehension	4	52.6	D	26.3
4	selects evaluation procedures	0	52.2	D	30.4
28	assists others implment aspect of patient treatment	21	50.0	D	4.3
29	records initial evaluation	3	50.0	D	20.0
21	instructs patient/family	0	47.8	D/F	13.0

Table 10 (continued)

Item	Description	Frequency of Not Observed	% Agreement	% Disagreement and Cell	
35	assumes appropriate PT roles	2	47.6	F	33.3
36	asks questions	2	47.6	F	33.3
20	educates patient/family	8	46.7	D	6.7
22	motivates patient/family	1	45.5	F	22.7
32	is reliable	1	45.5	F	45.5
37	modifies behavior to meet suggestions	0	43.5	F	43.5
8	identifies primary problems	0	43.4	D	30.4
9	identifies secondary problems	6	41.2	D	41.2
27	communicates orally	6	41.2	E	23.5
40	seeks resources to increase knowledge	10	38.5	F	30.8
1	uses knowledge of evaluating	4	36.8	D	47.4
17	ensures safety	2	33.3	D	28.6

Note: n=23

Table 6 presents the Kappa coefficients for each item. The median Kappa coefficient was .32. Although the Kappa coefficients was low, 26 items showed significance at or below a probability level of .05.

Cells in the crosstabulation tables were scrutinized to determine which discrepant rating pairs contribute to the percentage disagreement among the preceptors. Table 10 indicates that both cells D (2-3 rating pairs) and F (3-4 rating pairs) were responsible for the large percentage of the disagreement. Disagreement attributable to cell F was highest among the items under the major competency areas of professional behavior and documentation with the mean number of F cell ratings pairs at 5.9 and 3.5 respectively. By contrast, the mean number of D cell rating pairs was highest for items under program planning at 6.5 and patient evaluation at 5.33. When the discrepant pairs in the remaining cells were considered together and averaged, the items under documentation and communication with patient/family were highest at 3.0 and 2.8 respectively.

Once again, the 3 and 4 ratings were treated as one competency rating and the percentage agreement was retabulated for the resultant 3-point scale. Table 7 presents the percentage agreement of the 3-point scale for the 40 items by the major competency area and their ranking from high to low percentage agreement. The mean percentage agreement for the instrument using the 3-point scale improved to 73.2% with percentage agreements of items ranging from 100% to 36.8%.

Items which showed a high percentage agreement (greater than 90% agreement), listed in order, are those pertaining to respecting confidentiality, presenting a professional appearance, and being

reliable. Items which showed a low percentage agreement (less than 60% agreement), listed from lowest to highest values, were those related to communicating orally, selecting evaluation procedures, identifying secondary problems and using knowledge for evaluating. Items 19 and 28 were troublesome because the not observed rating was frequently used.

A general impression of agreement is obtained by looking at the rankings of the mean percentage agreement of the items within the major competency areas in Table 7. Items, dealing with professional behavior and implementation of treatment, tended to have the highest percentage agreement among the preceptors. Whereas, items pertaining to communication with family/family and program planning tended to have the lowest agreement among the preceptors.

The means of the students' raw scores for each item ranged from 3.90 to .391. Even though the first preceptors tended to have higher means and less variance than the second preceptors, there was a significant difference between the means for only three items: 26, 38 and 39. These items were different from those identified with the fourth year students.

The students' raw scores were transformed using the weights (Table 7) to produce for each student a total scale score and seven subscale scores. Table 8 presents the intraclass coefficients for the total scale score and the seven scale scores along with their F value and probability levels. The reliability of the ECC total scale scores was .620.

The total scale scores for the third year students ranged from 3.52 to 1.80 with a mean scale score of 2.72 from the first preceptors

and with a mean scale score of 2.79 from the second preceptors. Overall, the second preceptors tended to give slightly higher total scores with a wider variance of scores, but this difference between the preceptors was not significant ($p = .41$).

Third year results also indicated substantial concurrent validity of the ECC. Table 11 shows the correlations between ECC total scale scores and (1) the preceptor's hiring ratings, and (2) the UA performance scores. The reliability coefficient of the hiring rating with third year PT students was .512 over the two preceptors.

Results in Table 12 support construct validity of the ECC. The prediction that experienced students would perform better than novice students was verified by the significant difference found between mean ECC total scale scores awarded to the two groups of students by the two preceptors [$F(1,97) = 26.06$, $p = .000$].

Reactions of the Preceptors and Students to the Instrument

The total number of replies to the questionnaire regarding preceptors' reactions to the ECC was 34 or 81%.

The reactions of preceptors to the content, administration, format and effects of the ECC tended to be favorable, despite the extra burden placed on them to observe daily and to complete a longer and more detailed evaluation than ever before. In fact, 63% of preceptors viewed the administration procedures and instructions for the study positively.

The majority of preceptors felt that the number of subcompetencies included in the ECC was about right (82% of preceptors) and that content was relevant (85%). The four standards of performance for

Table 11

Correlation[a] of Total Scale Scores on the Revised Evaluation of Clinical Competence with Hiring Ratings and UA Performance Scores for the Third Year PT Students[b]

	Hiring Ratings		UA Scores
	Preceptor 1	Preceptor 2	Preceptor 1 only
Total ECC Scores			
Preceptor 1	.575	-	.666
Preceptor 2	-	.487	-

a Pearson product-moment correlations

b n=23

Table 12

Results of One-Way Analysis of Variance for the Total Scores Awarded Fourth Year and Third Year PT Students on the Evaluation of Clinical Competence

	$\bar{X}$	s^2	F (1,91)	p
Year				
Fourth	3.215	.189	26.06	.000
Third	2.758	.208		

each subcompetency were considered about right (91%) and descriptive enough to judge a student's performance (71%). The qualitative differences between each of the four standards were perceived to be about right (68%), although 16% felt that the differences were too large and another 16% felt that the differences were too small. The ability of the ECC to evaluate a student objectively was viewed as good or adequate by 91% of the preceptors. The format of the form and its ease of completion were liked by 74% of the preceptors; however, 55% of the preceptors would have liked space provided for subjective interpretation of the student's performance.

Daily observations of students were viewed negatively by only 21% of the preceptors. All subcompetencies were usually easy to observe (76% to 94% of preceptors), except those related to communication with other health care personnel which were seldom easy to observe (47%). Although 82% of preceptors felt that the final rating should be determined by considering the daily ratings given throughout the placement, 39% of preceptors were negative toward rating performance on the form on a daily basis.

The ECC was perceived to have a positive impact on the preceptor's skill in evaluating students (88%) and on the level of preceptor-student interaction (82%). A negative effect was noted by preceptors regarding the students' high levels of anxiety elicited by being observed by two preceptors (55%).

The total number of replies to the questionnaire regarding the students' reactions to the ECC was 22 or 40%.

The reactions of the students to the content, administration, format and effects of the ECC tended to be favorable, despite the

anxiety provoked by being observed daily by two preceptors. Daily observations were viewed negatively by only 18% of the students. Furthermore, only 10% of the students viewed the administration procedures for the study negatively. The anxiety provoked was perceived to influence their clinical performance in different ways. Nineteen percent of students felt that the anxiety had a positive influence, 38% felt that it had a negative influence, and 43% were unsure.

The ability of the ECC to evaluate a student objectively was considered good by 81% of the students. Seventy-one percent and 64% of the students felt that the ECC had a positive effect on the preceptors' skills in evaluating students on preceptor-student interactions, respectively. Eighty-two percent of students felt that the final rating should be determined by considering the daily ratings given throughout the placement. Only 36% of the students felt that space should be provided for comments.

Chapter V

DISCUSSION

Instrument Development Phase

One major contribution of the present study is the description of the process involved in developing a clinical evaluation instrument. Content validity is the first concern in the development of a clinical evaluation because of its intended use. An instrument, which is intended to determine if a PT student can perform entry-level clinical competencies and, subsequently, to make decisions regarding student promotion and graduation, must have an obvious link to the job to which the students will graduate.

The determination of clinically significant competencies needed for development of such an instrument can be based, in part, on response ratings of the importance of competencies outlined in the questionnaire. The verification of competencies and their relative importance obtained in this way provided a sound basis for sampling competencies for evaluation. Logically, all important competencies constituting the domain of clinical competence must be included in the instrument, thereby ensuring content validity.

The study has also shed some light on information that is most needed for defining the construct of clinical competence. Identification of clinical competence is most important for structuring the operations of clinical supervision and evaluation. Preceptors are

informed of what to expect from students and by what standards to judge the students' performances. Students are informed as to what competencies that they are expected to perform and to what standards.

In the questionnaire the respondents rated the importance of competencies according to their interpretation of its importance to PT practice. In these ratings, three major competency areas - patient evaluation, program planning and implementation of treatment - ranked highest, which may reflect an attitude on the part of practitioners that technical knowledge and skills have a more direct impact on treatment of patients than does the affective component of competence.

In contrast to highly ranked competencies, five major competency areas - documentation, communication with health care personnel, professional behavior and professional growth and management skills - were ranked comparatively lower. The inference may be that those areas not having a direct implication for treatment of the patient are not considered as important. Furthermore, subcompetencies descriptive of menial or bothersome tasks, e.g. scheduling, tidiness of treatment area, supervision of support personnel, and adherence to operational procedures, were also not viewed important.

In a client-centered profession such as PT the lower ratings of importance given to subcompetencies related to communication with the patient and family about their evaluation findings, treatment plan and physical status and treatment seems inappropriate. This finding is particularly odd since the area of communication with patient and family was the fourth top ranking major competency area. Competence in this area is perceived as ideal but is not necessarily being pursued in practice.

The lower importance value placed on these affective subcompetencies may reflect the curriculum that produced the practitioner rather than the job requirements. The professional training programs are lengthy and demanding with emphasis placed on developing technical knowledge and skills. Interpersonal and communication skills are not explicitly included in the curricula of many programs. This result may suggest further that the importance of affective behaviors are also not being reinforced with students in the clinical setting.

Factor analysis of medical evaluations has revealed two factors of the construct of clinical competence (DiMatteo and DiNicola, 1981; Davidge, Davis and Hull, 1980; Oratio, 1976), which for the most part are termed technical skills and interpersonal skills. The emergence of the interpersonal factor suggests that affective behaviors are critical to therapeutic effectiveness. Again, the question arises about the kinds of professional training required for competent therapeutic interactions. Courses in group dynamics and communication skills may enhance self-awareness and interpersonal relationships during therapy.

Another explanation for lower importance ratings of subcompetencies related to interpersonal skills may be because practitioners are less sure such subcompetencies should be used as criteria for student evaluation. In a study on affective education, Lacefield (1981) found that allied health professionals perceived affective skills to be a required area of competence for effective practice; paradoxically, however, they did not perceive them to be suitable for inclusion in formal education and evaluation of students.

Caution must be exercised when compiling a list of competencies

for evaluation purposes from a list of competencies rated by practitioners according to their importance in relation to their own professional practice. A subcompetency with minor importance must be considered in relation to its value to all aspects of professional practice and growth. Likewise, competencies appropriate for entry-level practice may be different from those appropriate for experienced practitioners working in diverse roles, such as in education, administration, consultation and community services. The wide variation in ratings of importance may give some indication of the diverse roles and functions assumed by physical therapists.

The subcompetencies related to education of the patient and family regarding his/her physical status and treatment was retained in the list of competencies to be evaluated by the instrument, despite its low importance rating. It is perceived to be, at the least, a behavior indicative of interpersonal communications conducive to meeting the psychological needs of the patient and family and thereby conducive to a good physical outcome in therapy.

In conclusion, the current findings, combined with those of past research, may be instrumental in studying the subcompetencies comprising the construct of clinical competence and their evaluation.

Instrument Validation Phase

Evaluation of the Instrument

Testing the ECC on a sample of students representative of the population, with which the final edition of the ECC will be used, was essential to making modifications prior to its implementation. The

sample, by necessity, was small (n=29), due to small class sizes (n=35) in the PT program at the UA. Hence, sample size limited the interpretation of the results.

Subcompetencies considered important to the evaluation of students' readiness to practice PT were refined and used to construct the revised ECC. Nine subcompetencies were deleted in the revised ECC, because they contributed minimally to the evaluation of students. Specifically, four subcompetencies were deleted because they were not regularly observed by preceptors in the clinical setting hence could not be evaluated. Three subcompetencies of low importance were dropped to shorten the ECC to a more practical length without jeopardizing the content validity. Another two subcompetencies were omitted because the content was dealt with more specifically under other subcompetencies.

The greatest disparity in the ratings between the preceptor pairs was from items considered highly important to PT practice. For example, items related to safety, selecting treatment procedures and recording initial evaluations showed poor agreement. This result may be due to the fact that important subcompetencies can be attained by alternative judgements and approaches with comparable outcomes. The important items susceptible to varied clinical judgements were worded more specifically to narrow the interpretation by preceptors to the observable behaviors most frequently displayed by students.

The best agreement between ratings of the preceptor pairs was for items under the major competency areas of patient evaluation and implementation of treatment. Examples of items with good agreement were those pertaining to tidying the treatment area, selecting evalua-

tion procedures, and preparing the patient for discharge. These items likely involve more precise judgements possible in the technical skill area of competence.

Although the percentage of agreement among preceptors for each individual item in the ECC, was relatively low when using a 4-point scale, agreement among preceptors, expressed as intraclass reliability coefficients, was good when items were pooled to obtain a total scale score. The reliability of the entire instrument was .704.

Validation of the Revised Instrument

Reliability of the Individual Items

The percentage agreement among the preceptors for the forty items in the revised ECC was relatively low using a 4-point scale. Also, the Kappa coefficients of agreement for each individual item rated on a 4-point scale were mainly in the .21 to .40 range, which is a fair level of agreement according to the classification of observer agreement for nominal data suggested by Landis and Koch (1977). Even though the Kappa coefficients of the items showed only fair agreement, two thirds of the items had significant reliability coefficients at or below the .05 probability level. A significant reliability value indicates that the amount of agreement between the two preceptors would occur by chance at or less than five percent of the time.

When comparing the percentage agreement results on the first edition of the ECC and the revised edition of the ECC with the fourth year PT students, some items were consistent in the amount of agreement shown. Low percentage agreement was seen on both instruments with items related to adhering to safety precautions, identifying

secondary problems and recording initial evaluations. The conclusion drawn, once again, is that preceptors tend to judge items of high importance inconsistently. Difficulty in discerning the extent to which safety precautions were implemented in treatment is particularly disconcerting. By contrast, high percentage agreement was evident across both evaluations for four items: tidiness of treatment area, respect for confidentiality, oral communication and education of the patient/family. It appears that preceptors judge more consistently items which show more uniformity in the way in which they are performed.

Of the seven major competence areas, items related to implementation of treatment area showed the highest median Kappa coefficients at .51 and .55 for fourth and third year PT students respectively. Moreover, the mean percentage agreement of items was highest for those items under the implementation of treatment area. Since items in this major competency area were readily observed and frequently rated through the clinical placement, there was more information available to preceptors for determining the final ratings on treatment items, thus promoting consistency. Further to this, technical skills seem less suspectible to variations in a student's approach and/or to the preceptor's individual point of view.

The second preceptors tended to give both third and fourth year students lower mean ratings than did the first preceptors, but this difference was not significant except for a few items. The items which showed a significant difference between the mean ratings awarded by the two preceptors were items 19, 28, 31, 36 and 38 for the fourth year students and items 26, 38 and 39 for the third year students.

This significant difference arose when disproportionately more, "Not Observed", ratings were used by the second preceptor. The missing data, procured by the high usage of the not observed rating, limited analysis and interpretation of the results.

The items which were consistently not observed with both third and fourth year PT students were those related to preparing the patient for discharge and assisting others implement aspects of the patient's PT treatment. Even though these subcompetencies were considered important, they were not readily observable with students. The possible reasons for this situation are many. Subcompetencies which required unobtrusive observation during spontaneous student-patient interaction did not lend themselves to scheduled observations by two preceptors. This notion is supported by the finding that the second preceptors, who were assigned to students for daily observation and evaluation only, used the not observed rating more frequently than did the first preceptors, who were also designated as the students' supervisors. The first preceptors may have had more opportunity to observe unobtrusively. Another possible explanation might be that preceptors perceived certain subcompetencies to be their responsibility and shielded students from experience in these areas. Or some subcompetencies may be rare occurrences, particularily for students who practice only half days.

When the 4-point scale was reduced to a 3-point scale, the percentage agreement of items improve dramatically particularily for those items related to professional behavior. The disagreement seen between competent (3) and highly competent (4) rating pairs may be due to either a lack of clarity in the meaning of the two levels of

competence or preceptors' inability to make fine discriminations of competence. The conclusion made is that the ECC reliably differentiates between incompetence (fail) and competence (pass) but does not reliably differentiate between competence (pass) and a high level of competence (honors).

Reliability of the Entire Instrument

When the items were pooled to obtain subscale scores for the seven major competency areas and to obtain a total scale score, agreement among preceptors, expressed as intraclass reliability coefficients, was quite good. The reliabiity of the ECC total scale scores was .591 for fourth year PT students and .624 for third year PT students. A reliability of .591 indicates that 35 percent of the variance in performance by individual students was accounted for by actual differences in performance. The remaining variance in performance was due to preceptor error and variable clinical situations. In comparison to similar clinical evaluations in medicine, the reliability results for the ECC surpassed most evaluations. Irby, Evans and Larson (1978) suggested that reliability of clinical evaluation rarely exceeds .30.

The improved reliability for the scale scores suggests further that the ECC functions better as a summative evaluation which yields a total score for each student as opposed to a formative evaluation which provides feedback to the students about their performance on each subcompetency. The total scores give a reliable overall assessment of the competence of students.

An explanation concerning the gradually declining reliability coefficients over the three testing occasions from November, 1982 to

March, 1983 - .704, .624 and .591 - is needed. One environmental factor which changed during the course of the study was an increased work demand placed upon preceptors due to economic constraints imposed by hospital administrations. As a consequence, preceptors had less time available to devote to the study. Preceptors' enthusiasm toward the study may have also waned over its five month duration, especially those who were involved in two or more of the testing occasions.

The reliability of the ECC for third year PT students at .624 was good, even though it was not designed for their use. This result is likely because the novice students performed at lower levels of competence than fourth year students, where discriminations were easier for preceptors.

In relation to the seven subscale scores for each of the major competence areas, the professional behavior area had the lowest intra-class reliability coefficients for both the fourth year and third year PT students at .092 and .257, respectively. The professional behavior area was the section of the ECC designed as a subjectively-worded rating scale. The low reliability found for professional behavior illusrates that a behaviorally-anchored rating scale yields better reliability than a subjectively-worded rating scale.

Validity

Content validity of the ECC was safeguarded by careful planning in the development phase of the instrument. Logical analysis revealed that subcompetencies included in the ECC were representative of the behaviors considered necessary for acceptable clinical performance in PT.

Concurrent validity of the ECC was found by comparison with the criterion of potential employability. The high correlation coefficients between the two evaluations suggested that ECC scores estimated potential employability. The hiring rating showed a high reliability between the two preceptors which gives added credence to its use as a criterion measure. Caution is advised, however, in the interpretation of the relatively high correlation between these two evaluations due to the possibility of criterion contamination, since preceptors were aware of how the student performed on both evaluations.

Predictive validity was not investigated in the present study. The main purpose of the study was to evaluate current clinical competence of students, not to predict future clinical competence. A follow-up study should be conducted to determine if ECC scores predict future clinical competence in a job.

Construct validity of the ECC was supported by confirmation of the hypothesis that experienced fourth year PT students would perform significantly better on the ECC than novice third year PT students. This finding clarifies the nature of clinical competence and verifies that the ECC actually measures clinical competence. The ECC, therefore, determines the extent to which clinical competence has been attained by PT students.

Usability

The primary advantage of the ECC for assessing the students' observed performances was its suitability to the clinical setting characterized by a wide range of patients and situations. The sub-competencies in the ECC were general in nature emphasizing how well the student integrated and applied the knowledge, skills, judgements

and attitudes for effective performance and optimal care to patients. Consequently, students' behaviors in vastly different clinical settings, such as a burn unit, pediatric unit, intensive care unit and home care service, could be readily translated to fit the ECC format.

The reactions of the preceptors and students to the content, administration and effects of the ECC were extremely positive, even though it was a longer and more detailed evaluation than ever before. Communication of the competencies and standards helped both the preceptors and students in knowing what was expected and to what standard of performance. The daily record of performance was also viewed favorably indicating that feedback to the students regarding their performance would be more immediate and precise as well as being helpful in determining a final rating based on habitual performance.

The ECC could be administered easily in any physical therapy clinical program requiring only minimal instruction in its use. If utilized for grading purposes, the ECC is reliable for determining an incompetent or failing grade but it is not reliable for determining an honors level of competence.

Chapter VI

CONCLUSIONS AND RECOMMENDATIONS

The major contributions of the present study were the following:

1. Identification of clinical competencies in order of importance to the practice of PT helped to define the construct of clinical competence.
2. The process involved in developing a clinical evaluation instrument was described.
3. A criterion-reference evaluation was developed which fulfills a need in PT education for an assessment of clinical competence of PT students. The Evaluation of Clinical Competence was developed to determine the extent to which a PT student in the final year of the training program has achieved the clinical competencies necessary to be eligible for admittance into the PT profession.
4. Methods suggested in the measurement literature to improve reliablity and validity of observational evaluations were incorporated into the design of the evaluation in an attempt to diminish the gap between what is theoretically desirable in assessment of students and what evaluation procedures are actually used in the clinical setting. To this end, a behaviorally-anchored, 4-point rating scale was devised to judge the quality of a student's performance according to four standards of performance expected for entry into the PT

profession. The standards of performance referred to what behaviors a student must display to warrant a certain rating. A daily record of a student's performance was included in the evaluation to ensure that the final ratings relied on the actual behaviors demonstrated by the student over a number of occasions with different patients and thereby lessen the tendency for preceptors to be influenced by memory, biases, recency effects and an atypical performance on one occasion or with one difficult patient.

5. The reliability and validity of the rating scale were established with PT students from the UA.

Recommendations

The ECC with its known reliability and validity will be helpful to both educators and preceptors in making major decisions regarding a student's clinical competence, promotion and graduation. This competency-based evaluation offers reasonable precision and reliability in making judgements about the clinical competencies possessed and applied by the PT student. The ECC discriminates between incompetence or a failing grade and competence or a passing grade; however, caution is advised in the use of the ECC to discriminate between competence and a honors level of competence. The ECC will not only be useful in student education, but may also be helpful in clinical certification of foreign-trained physical therapists and re-entry physical therapists. The ECC will continue to evolve with further use, validation studies and feedback from students and preceptors.

Continual testing not only corrects errors of measurement but assists users to define more clearly what they are measuring.

The ECC requires more extensive research with a larger sample of PT students. Field testing with PT students from several Canadian universities during their summer placements may be feasible. The extent to which the ECC can predict future job performance should also be investigated. A further study might also use videotaped recordings of student performance on selected competence areas to determine intra-rater reliability over time. The training of preceptors in the use of the ECC may also be studied to determine the effect on the reliability.

REFERENCES

References

Allen, M. & Yen. W. Introduction to measurement theory. Monterey, California: Brooks/Cole Publishing, Co., 1979.

American Physical Therapy Association. Competencies in physical therapy: An analysis of practice (3rd ed.). Washington, D.C., 1981.

Anwar, R. A. H., Bosk, C., & Greenburg, A. G. Resident evluation: It is, can it, should it be objective? Journal of Surgical Research, 1981, 30, 27-41.

Ashton-McCrimmon, E., & Hamel, F. Physical therapy competencies: A market study. Physiotherapy Canada, 1983, 35, 77-83.

Baker, E. L. Beyond objectives: Domain-referenced test for evaluation and instructional improvement. Educational Technology, 1974, 14, 10-16.

Barro, A. Survey and evaluation of approaches to physical performance and measurement. Journal of Medical Education, 1973, 48, 1051-1093.

Beneson, T. F., Stimmel, B., & Aufses, A. Concordance of surgical clerkship performance and National Board of Medical Examiners Part II subtest scores. Surgery, 1981, 89, 692-696.

Bemis, S., Smith, H., & Mauser, W. Physical therapy: Development of a forced-choice form. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C.V. Mosby Co., 1978.

Berner, E. S., & Berner, K. J. Determining how to begin. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C.V. Mosby Co., 1978.

Bull, G. M. Examinations. Journal of Medical Education, 1959, 34, 1154-1158.

Campbell, S. K. Development of psychomotor objectives for classroom or clinical education in physical therapy. Physical Therapy, 1977, 57, 1031-1034.

Canadian Physiotherapy Association. Recommended core curriculum for physiotherapy education programmes. Canadian Physiotherapy Association, 44 Eglinton Avenue West, Toronto, Ontario, 1982.

The Chartered Society for Physiotherapy. Continuous assessment record book. Chartered Society for Physiotherapy, London, England, 1976.

Chidley, M. J., & Kisner, C. B. Systematic curricular development in physical therapy. Physical Therapy, 1979, 59, 409-417.

Cohen, J. A coefficient of agreement for nominal scales. Education and Psychological Measurement, 1960, 20, 37-46.

Davidge, A.M., Davis, W.K., & Hull, A. L. A system for the evaluation of medical students' clinical competence. Journal of Medical Education, 1980, 55, 65-67.

Davis, C. M., Anderson, M. J., & Jagger, D. Competency: The what, why and how of it. Physical Therapy, 1979, 59, 1088-1094.

Deitz, J.C., & Slaymaker, J. Pilot study of a revised field work performance report rating procedure. American Journal of Occupational Therapy, 1979, 33, 249-254.

DeMers, J. L. Observational assessment of performance. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C.V. Mosby Co., 1978.

Department of Physical Therapy Policy Manual. Motion 81-31. Department of Physical Therapy, 210 Corbett Hall, University of Alberta, Edmonton, Alberta.

Dielman, J. E., Hull, A. L., & Davis, W.K. Reliability of clinical performance ratings. Proceedings of the Annual Conference of Research in Medical Education, 1979, 11, 191-196.

DiMatteo, M. R., & DiNicola, D. D. Sources of assessment of physician performance: A study of comparative reliability and patterns of intercorrelation. Medical Care, 1981, 19, 829-839.

Dowaliby, F. J., & Andrew, B. J. Relationships between clinical competency ratings and examination performance. Journal of Medical Education, 1976, 51, 181-188.

Erviti, V., Fabrey, M. S., & Bruce, J. V. The development of rating scales to assess the clinical performance of medical students. Proceedings of the Annual Conference of Research in Medical Education, 1979, 11, 185-190.

Fiel, N. J., Griffin, R. E., McNeil, J. A., Ajunwa, M. J., Salisbury, C. A., & Aasved, C. A model for evaluating student clinical psychomotor skills. Journal of Medical Education, 1979, 54, 511-513.

Gaines, W. G, Bruggers, H., & Rasmussen, R. H. Reliability of ratings in preclinical fixed prosthodontics: Effects of objective scaling. Journal of Dental Education, 1974, 38, 672-675.

Glaser, R., & Nitko, A. J. Measurement in learning and instruction. In R. L. Thorndike (Ed.), Educational measurement (2nd ed.). Washington, D.C.: American Council on Education, 1971.

Gronlund, N. E. Measurement and evaluation in teaching (3rd ed.). New York: Macmillian, Inc., 1976.

Guilford, J. P. Psychometric Methods (2nd ed.). New York: McGraw-Hill Book Co., 1954.

Holloway, P., Collins, C., & Start, K. Reliability of viva voce examinations. British Dental Journal, 1968, 125, 211-214.

Houpt, M. I., & Kress, G. Accuracy of measurement of clinical performance in dentistry. Journal of Dental Education, 1973, 37, 34-46.

Irby, D., Evans, J., & Larson, L. Trends in clinical evaluation. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C.V. Mosby Co., 1978.

Kapp, M. B. Legal issues in faculty evaluation of student clinical performance. Journal of Medical Education, 1981, 56, 559-564.

Kern, B. P., & Mickelson, J. M. The development and use of an evaluation instrument for clinical education. Physical Therapy, 1971, 51, 540-546.

Lacefield, W. E. Skill domain for allied health professionals. Journal of Allied Health, 1981, 10, 188-197.

Landis, J. R., & Koch, G. G. The measurement of observer agreement for categorical data. Biometrics, 1977, 33, 159-174.

Lass, S. L., Korndreich, H. K., Hoffman, K. J., & Friedman, D. B. Consistency in ratings of clinical performance of the same students throughout medical school and internship. Proceedings of the Annual Conference on Research in Medical Education, 1977, 16, 147-152.

Levine, H. G., McGuire, C. H. & Nattress, L. W. The validity of multiple choice achievement tests as measures of competence in medicine. American Educational Research Journal, 1970, 1, 69.

Levine, H. G. Medicine - A model pediatric clerkship. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C. V. Mosby Co., 1978 (a).

Levine, H. G. Selecting evaluation instruments. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C. V. Mosby, Co., 1978 (b).

Liston, E. H., Yager, J., & Strauss, G. D. Assessment of psychotherapy skills: The problem of interrater agreement. American Journal of Psychiatry, 1981, 138, 1069-1074.

Littlefield, J. H., Harrington, J. T., Anthracite, N. E. & Garman, R. E. A description and four-year analysis of a clinical clerkship evaluation system. Journal of Medical Education, 1981, 56, 334-340.

Lui, P. et. al. Videotape reliability: A method of evaluation of a clinical performance examination. Journal of Medical Education, 1980, 55, 713-715.

Mackenzie, R. S. Factors essential to evaluation of clinical performance. Journal of Dental Education, 1974, 38, 214-223.

Marienfield, R. D., & Reid, J. C. Subjective versus objective evaluation of clinical clerks. New England Journal of Medicine, 1980, 302, 1036-1037.

May, B. J. Evaluation in a competency-based educational system. Physical Therapy, 1977, 57, 28-33 (a).

May, B. An integrated problem solving curriculum design for physical therapy educators. Physical Therapy, 1977, 57, 807-13 (b).

Mays, M. J. Reliability of a method of evaluating the clinical performance of a physical therapy student. Physical Therapy, 1973, 53, 1298-1306.

McDaniel, L. V. The critical incident method in evaluation. Journal of the American Physical Therapy Association, 1964, 44, 235-242.

Muthard, J. E., Morris, J. D., Crocker, L. M., & Slaymaker, J. E. Field work experience ratings and certification examination scores as predictors of job performance and satisfaction in occupational therapy. American Journal of Occupational Therapy, 1976, 30, 151-156.

Newble, D. J. The evaluation of clinical competence. Medical Journal of Australia, 1976, 2, 180-183.

Oaks, W. W., Scheinok, P. A., & Husted, F. L. Objective evaluation of a method of assessing student performance in a clinical clerkship. Journal of Medical Education, 1969, 44, 207-213.

O'Donohue, W. J., & Wergin, J. F. Evaluation of medical students during a clinical clerkship in internal medicine. Journal of Medical Education, 1978, 53, 55-58.

Oratio, A. R. A factor-analytic study of criteria for evaluating student clinicians in speech pathology. Journal of Communication Disorders, 1976, 9, 199-210.

Petersdorf, R. G. Evaluation of the general internist. Archives of Internal Medicine, 1977, 137, 1305-1310.

Pinkston, D., Hochhauser, S. L., & O'Loughlin, K. G. Standards for basic education in physical therapy. Physical Therapy, 1975, 55, 841-849.

Printen, K. J., Chappell, W., & Whitney, D. R. Clinical performance evaluation of junior medical students. Journal of Medical Education, 1973, 48, 343-348.

Ryge, G., & Synder, M. Evaluating the clinical quality of restorations. Journal of the American Dental Association, 1973, 87, 369-377.

Schor, E., Grayson, M., Nugent, C., & Oken, S. L. A theoretical and practical approach to evaluating clinical skills. Proceedings of the Annual Conference of Research in Medical Education, 1977, 16, 200-205.

Scully, R. M., & Shepard, K. F. Clinical teaching in physical therapy education: An ethnographic study. Physical Therapy, 1983, 63, 349-358.

Shepard, K. F. Considerations for curriculum design. Physical Therapy, 1977, 57, 1389-1393.

Sherer, M., & Rogers, R. W. Effects of therapist's nonverbal communication on rated skill and effectiveness. Journal of Clinical Psychology, 1980, 36, 696-700.

Slaymaker, J. E. Occupational therapy: Development of a rating scale. In M. Morgan and D. Irby (Eds.), Evaluating clinical competence in the health professions. St. Louis: C.V. Mosby Co., 1978.

Slaymaker, J. E., Crocker, L. M., & Muthard, J. E. Field work performance report manual. American Occupational Therapy Association, Rockville, Maryland, 1974.

Standards for the physical therapy practitioner. Physical Therapy, 1972, 52, 647-49.

Standards for basic education in physical therapy. Physical Therapy, 1972, 52, 521-525.

Sternburg, J., & Brockway, B. Evaluation of clinical skills: An assert-oriented approach. Journal of Family Practice, 1979, 8, 1243-1245.

Texas Consortium for Physical Therapy Clinical Education. Mastery and Assessment of Clinical Skills. Texas Consortium of Physical Therapy Clinical Education (3rd ed.), Galveston, Texas, 1981.

Watts, N. F. Task analysis and division of responsibility in physical therapy. Physical Therapy, 1971, 51, 23-35.

Waugh, D., & Moyse, C. Medical education Part II, oral examinations: A videotape study of the reliability of grades in pathology. Canadian Medical Association Journal, 1969, 100, 635-645.

Wigton, R. S. The effects of student personal characteristics on the evaluation of clinical performance. Journal of Medical Education, 1980, 55, 423-427.

Wigton, R. S. Factors important in the evaluation of clinical performance of internal medicine students. Journal of Medical Education, 1980, 55, 206-208.

Wilhelm, I. J. Q-methodology in rating the clinical competency of physical therapy students: A model. Physical Therapy, 1979, 49, 1227-1230.

APPENDIX A

Competencies to be Achieved by Physical Therapy Students Upon Completion of Their Clinical Education Program

Competencies to be Achieved by Physical Therapy Students Upon Completion of Their Clinical Education Program

Upon completion of a clinial education program in PT, the students must be able to fulfill the following competencies:

A. patient evaluation

The student must demonstrate the knowledge, skills and attitudes with which to identify and gather pertinent patient care information (from the patient, significant others, medical records and direct physical therapy tests and evaluation procedures) in order to evaluate the patient's neuro-musculo-skeletal status, and to evaluate the results of the physical therapy treatment provided by the student.

The student will demonstrate competency in patient evaluation by meeting the following criteria:

1. accurately and objectively gathers pertinent patient information from medical records and significant others prior to the initial evaluation

2. accurately and objectively gathers pertinent information from the patient interview

3. selects physical therapy (PT) evaluation procedures (includes observation, palpation and measurement) appropriate to the patient's disability, age and personality

4. performs selected PT evaluation procedures according to standardized or recommended technique

5. performs selected PT evaluation procedures safely, thoroughly and efficiently

6. assesses the appropriateness of patient's appliances/ equipment and/or assesses the need for appliances/ equipment

7. utilizes knowledge of normal human structures and function, pathological conditions, and evaluation procedures in order to gather data relevant to the neuro-musculo-skeletal status of the patient

8. explains aspects of evaluation procedures and findings that should be explained to the patient/family

9. recognizes signs of the patient's apprehension and responds appropriately to ease it

10. systematically and objectively evaluates the results of the treatment procedures used

11. performs a comprehensive re-evaluation at appropriate intervals to determine effectiveness of treatment outcome.

B. program planning

The student must demonstrate the knowledge, skills and attitudes with which to interpret and integrate evaluation data in order to identify the patient's problems and capabilities, and to plan a progressive physical therapy treatment program using procedures which are consistent with the patient's status, and physical and psychological needs/goals.

The student will demonstrate competency in program planning by meeting the following criteria:

1. utilize knowledge of pathology and normal human structures and functions to interpret and integrate evaluation data gathered from all sources

2. identifies primary problems which may be alleviated by physical therapy

3. identifies secondary problems which may be prevented by physical therapy and those requiring referral to other health care services

4. organizes the primary problems in order of importance

5. identifies the patient's capabilities

6. suggests referral to other health care services when indicated

7. determines short-term goals to alleviate primary problems

8. establishes long-term goals which are realistic to the probable discharge situation.

9. selects appropriate PT treatment procedures which are consistent with short- and long-term goals

10. presents alternative solutions to problems

11. justifies his/her choice of treatment procedures utilizing knowledge of PT treatment procedures and the patient's condition

12. informs the referring physician, when, in the student's judgement, a change in the requested treatment would be more beneficial

13. treatment plan demonstrates progression in a logical sequence and is consistent with the patient's physical and psychological needs

14. selects the correct frequency and duration of each treatment procedure

15. treatment plan provides for re-assessment of the outcome of chosen PT treatment procedures

16. includes the patient in the planning process by guiding the patient's determination of goals and selection of PT treatment procedures

17. obtains the patient's informed consent prior to commencement of treatment.

C. implementation of the treatment program

The student must demonstrate the knowledge, skills and attitudes with which to organize and effectively perform patient treatments and progressions, within the recommended standards of quality care and safety for both the patient and student, in order to provide optimal patient care.

The student will demonstrate competency in implementation of the treatment program by meeting the following criteria:

1. positions, moves and drapes the patient to ensure comfort, dignity and safety

2. implements the treatment plan safely and effectively utilizing knowledge of PT treatment procedures

3. observes the patient continually to assess patient's clinical signs and response to the treatment given

4. modifies existing treatment procedures to obtain the patient's best performance and interest

5. treats the patient within his/her limits of disability, capability, age, tolerance (fatique, pain)

6. implements or suggests new treatment procedures or progressions consistent with observations and ongoing evaluations

7. recommends appropriate time of discharge from PT services

8. prepares patient/family for discharge in adequate time

9. develops and records the post-discharge program for the patient/family keeping community and hospital resources in mind

10. prepares treatment area prior to treatment

11. cleans up treatment area and equipment after use

12. adheres to all precautions associated with equipment, modalities and treatment procedures (e.g. checks equipment prior to use)

13. uses correct body mechanics when applying techniques and when moving patients and/or equipment

14. knows hospital emergency procedures and sterile technique

15. reports need for equipment repair and need of supplies.

C. communication with patient/family

The student must demonstrate the knowledge, skills and attitudes with which to establish communication at a level appropriate for the patient/family in order to develop a therapeutic relationship conducive to their understanding, motivation and confidence regarding the therapeutic process and the patient's condition.

The student will demonstrate competency in communication with patient/family by meeting the following criteria:

1. educates the patient/family regarding the patient's status and treatment procedures as well as their importance or implications

2. adjusts approach and level of communication to the patient's/family's age, education and understanding

3. exhibits 'caring' attitude toward the patient/family by listening to them express their attitudes and feelings

4. informs or prepares the patient/family for progressions or changes in treatment provision

5. gives the patient/family clear and concise instruction during treatment

6. uses praise and other reinforcers to encourage the patient/family

7. relieves the patient's/family's apprehension and instills confidence

8. sets appropriate limits on the patient's behavior that interferes with treatment

9. teaches the patient/family/other appropriate health care personnel ways in which to implement or continue treatment.

E. communication with health care personnel

The student must demonstrate the knowledge, skills and attitudes with which to effectively give and receive patient care information by verbal and nonverbal methods in order to establish professional relations as a member of the health care delivery system.

The student will demonstrate competency in communication with health care personnel by meeting the following criteria:

1. communicates, in oral or written form, results of evaluation to the physician, supervising therapist and other appropriate health care personnel

2. communicates, in oral or written form, observations, results of treatment and treatment progressions or changes to the appropriate personnel

3. presents oral reports in form, content and manner appropriate for the intended audience (e.g. patient conferences, rounds)

4. correctly interprets and utilizes oral and written communication from others

5. exhibits perceptiveness, tact and discretion in communication with others

6. respects confidentiality of information

7. interprets the roles and functions of PT to others according to their level of interest and understanding.

F. documentation

The student must demonstrate the knowledge and skills with which to document patient care information in medical and statistical

records in accordance with the policies of the facility and professional clinical practice.

The student will demonstrate competency in documentation by meeting the following criteria:

1. documents evaluation results in the patient care record in a manner which is objective, pertinent, accurate, thorough, concise and legible

2. documents problem lists, treatment goals and treatment plan

3. documents observations, treatment procedure modifications or progressions which are consistent with observations and ongoing evaluation

4. documents patient data according to the format of the facility and within specified time limits

5. documents data using accurate medical terminology

6. uses Canadian System of Unit Values to accurately record statistical data.

G. personal/professional behavior

The student must demonstrate personal/professional behavior by adherence to legal, ethical, professional and facility requirements.

The student will demonstrate competency in personal/professional behavior by meeting the following criteria:

1. presents a professional appearance

2. accepts responsibility

3. assists and cooperates willingly with co-workers

4. accepts constructive criticism and suggestions, and modifies behavior accordingly

5. handles personal and professional frustration appropriately

6. is reliable regarding punctuality and duties.

H. personal/professional growth

The student must demonstrate the knowledge, skills and attitudes with which to critically examine his/her personal/professional performance and to pursue educational and research activities

which promote personal/professional growth and continuing competency.

The student will demonstrate competency in personal/professional growth by meeting the following criteria:

1. identifies own strengths and weaknesses
2. asks appropriate questions or seeks assistance when in doubt
3. uses added knowledge and self-assessment to improve overall performance
4. seeks out available resources, references and inservice education to enhance knowledge and skills and to keep up with new developments
5. uses unscheduled time in an effective and beneficial manner
6. demonstrates problem-solving skills in patient management
7. interprets and utilizes results of research performed by others.

I. management of direct patient care

The student must demonstrate the knowledge, skills and attitudes with which to facilitate the provision of comprehensive patient care.

The student will demonstrate competency in management of direct patient care by meeting the following criteria:

1. organize case-load and coordinates treatment times with patient/PT staff/other therapies
2. schedules self the appropriate amount of time for preparation, completion and documentation of treatment
3. adjusts schedule to meet unforeseen events
4. supervises support PT personnel appropriately
5. follows or recommends alternative operational policies and procedures related to direct patient care
6. assumes the PT role or function (prevention, maintenance, consultation, community-based) appropriate to the health care setting

7. aware of functions of other disciplines involved in the patient care team and collaborates with these disciplines to provide comprehensive patient care.

APPENDIX B

Questionnaire to Rate Importance of Competencies in Physical Therapy and Accompanying Letter

Dear

I am writing to ask for your assistance in a project in which I am developing a clinical evaluation instrument, Evaluation of Clinical Competence. The purpose of this evaluation is to determine whether a fourth year physical therapy student has achieved the competencies which enable him/her to perform adequately as a new practitioner following graduation. As part of the instrument development phase, I need assistance from physical therapists in clinical practice to rate the degree of importance of certain competencies to provision of patient care. The rationale for this project is explained more fully in the instructions which accompany the competencies to be rated.

I have enclosed a number of competency rating forms with an attached instruction page to facilitate correct completion of the rating form. I would appreciate if as many therapists in your department as are willing would participate in the rating. The ratings are extremely important as to the score a student will receive on a competency in this new evaluation form.

To protect the therapist's confidentiality, would you please distribute the competency rating forms to the therapists in your department. I have asked the therapists to return the completed rating forms to you within a two week period. Then, if you would please return these forms to me in the stamped and self-addressed envelope provided, the identity of the hospital would also be protected.

Thank you very much for any assistance that you and the therapists in your department can give me.

Sincerely,

Joan Loomis

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Competency Rating Form

Preamble

I am currently developing a clinical evaluation instrument to determine if fourth year physical therapy students have achieved the competencies required for adequate performance upon entering the physical therapy profession.

The first step in the development of an instrument designed to evaluate clinical competence is to identify clinically significant competencies. A number of competencies have been identified from a survey of the literature and professional documents.

The second step in the instrument development phase is to rate each competency according to its degree of importance in the provision of direct patient care. This rating will be used to weigh each competency on the evaluation form so that its degree of importance influences the score awarded the student.

You would assist me greatly in the development of this instrument, Evaluation of Clinical Competence, if you would rate each competency according to how important you feel that it is to clinical practice in pysical therapy. Importance ratings are influenced by such factors as frequency of occurrence, life-threatening or harmful aspects of inadequate performance or values espoused by the physical therapy profession.

Instructions

1. Please circle on the accompanying pages the rating that you feel most indicates how important each competency is to clinical practice in physical therapy:

nonessential	noness.
minor importance	minor
important	imp.
very important	v. imp.
essential	ess.

2. Please do not write your name on any of the pages to ensure confidentiality.

3. Please return the completed competency rating form to your department supervisor within a two week period. He/she will return them all to me in an unmarked self-addressed envelope to safeguard against identification of yourself and your employer.

(4. If you are interested, you may wish to reword any competencies for clarity or suggest any competencies that may have been overlooked).

Joan Loomis

Circle the rating that you feel most indicates how important each competency is to clinical practice in physical therapy.

Key: noness - nonessential
minor - minor importance
imp - importance
v.imp - very important
ess - essential

Competencies in patient evaluation

noness minor imp v.imp ess 1. accurately and objectively gathers pertinent patient information from medical records and significant others prior to the evaluation

noness minor imp v.imp ess 2. accurately and objectively gathers pertinent information from the patient interview

noness minor imp v.imp ess 3. selects PT evaluation procedures (includes observation, palpation and measurement) appropriate to the patient's disability, age and personality

noness minor imp v.imp ess 4. performs selected PT evaluation procedures correctly, safely, accurately and proficiently

noness minor imp v.imp ess 5. assesses the appropriateness of the patient's appliances/equipment and/or assesses the need for appliances/equipment

noness minor imp v.imp ess 6. utilizes knowledge of anatomy, physiology, pathological conditions and evaluation procedures in order to gather data relevant to the patient's status

noness minor imp v.imp ess 7. explains aspects of the evaluation procedures and findings that should be explained to the patient/family

noness minor imp v.imp ess 8. recognizes signs of the patient's apprehension during the evaluation and responds appropriately to ease it

noness minor imp v.imp ess 9. performs a comprehensive re-evaluation at appropriate intervals to determine effectiveness of the treatment outcome

Competencies in program planning

noness minor imp v.imp ess 10. utilizes knowledge of pathology, anatomy and physiology to interpret and integrate evaluation data gathered from all sources

noness minor imp v.imp ess 11. identifies and prioritizes primary problems which may be alleviated by physical therapy

noness minor imp v.imp ess 12. identifies and prioritizes secondary problems which may be prevented by PT and those requiring referral to other health care services

noness minor imp v.imp ess 13. determines short-term goals to alleviate primary problems

noness minor imp v.imp ess 14. determines long-term goals which are realistic to the probable discharge situation

noness minor imp v.imp ess 15. selects PT treatment procedures (includes selection of sequence, frequency, duration and progression of procedures) appropriate to the patient's physical and psychological goals and needs

noness minor imp v.imp ess 16. utilizes knowledge of the physiological effects of PT treatment and the pathology of the patient's condition to defend his/her choice of treatment procedures with physicians and supervising therapist

noness minor imp v.imp ess 17. includes the patient/family appropriately in the planning process by guiding the patient's/family's determination of goals and selection of PT treatment procedures, and obtains the patient's informed consent prior to commencement of treatment

Key: noness - nonessential
minor - minor importance
imp - importance
v.imp - very important
ess - essential

Competencies in implementation of the treatment program

noness minor imp v.imp ess 18. positions, moves and drapes the patient to ensure comfort, dignity and safety

noness minor imp v.imp ess 19. implements the treatment plan in a correct, safe, effective and proficient manner

noness minor imp v.imp ess 20. observes the patient continually to assess patient's clinical signs and response to the treatment with respect to the patient's disability/age/tolerance

noness minor imp v.imp ess 21. modifies or progresses or implements new treatment procedures in accordance with student's observations and ongoing evaluations and in order to obtain the patient's best performance and interest

noness minor imp v.imp ess 22. accepts responsibility for preparation, care and tidiness of the equipment and treatment area, and reports need for supplies and equipment repair

noness minor imp v.imp ess 23. schedules self and organizes patient schedule in collaboration with the patient/PT staff/other disciplines/unforeseen events

noness minor imp v.imp ess 24. adheres to all safety precautions associated with equipment, modalities and treatment procedures

noness minor imp v.imp ess 25. uses correct body mechanics when applying techniques and when moving patient and/or equipment

noness minor imp v.imp ess 26. recommends and prepares patient/family for discharge in adequate time and develops a suitable post-discharge program keeping community and hospital resources in mind

Competencies in communication with patient/family

noness minor imp v.imp ess 27. educates the patient/family regarding the patient's status and PT treatment procedures, progressions and discharge plans

noness minor imp v.imp ess 28. adjusts approach and level of communication to the patient's/family's age, education, comprehension, apprehension and confidence

noness minor imp v.imp ess 29. gives clear and concise instructions/demonstrations to motivate and encourage the patient/family during treatment

noness minor imp v.imp ess 30. uses praise and other feedback to encourage the patient/family

noness minor imp v.imp ess 31. exhibits 'caring' attitude toward the patient/family by listening to them express their attitudes and feelings and by setting appropriate limits on behavior that interferes with treatment

noness minor imp v.imp ess 32. teaches the patient/family ways in which to implement or continue treatment

Competencies in communication with other health care personnel

noness minor imp v.imp ess 33. communicates patient care information orally to the physician/supervising therapist/appropriate others in form, content and manner appropriate for the intended audience

noness minor imp v.imp ess 34. correctly interprets and utilizes oral and written communication from others

noness minor imp v.imp ess 35. exhibits perceptiveness, tact and discretion in communication with others

noness minor imp v.imp ess 36. respects confidentiality of information

noness minor imp v.imp ess 37. assists other health care personnel implement aspects of the patient's PT treatment according to their level of interest and understanding

Key: noness - nonessential
minor - minor importance
imp - importance
v.imp - very important
ess - essential

Competencies in documentation

noness	minor	imp	v.imp	ess	
					38. documents evaluation results in the patient care record in a manner which is relevant, accurate, objective, complete, concise and legible
					39. documents complete and appropriate problem list, treatment plan, progression of the treatment plan and patient progress
					40. documents patient records and statistical records according to the format and time limits of the facility

Competencies in personal/professional behavior

noness	minor	imp	v.imp	ess	
					41. presents a professional appearance
					42. accepts responsibility
					43. assists and cooperates willingly with co-workers
					44. accepts suggestions and modifies behavior accordingly
					45. handles personal and professional frustrations appropriately
					46. is reliable regarding punctuality and duties

Competencies in personal/professional growth

noness	minor	imp	v.imp	ess	
					47. identifies own strengths and weaknesses
					48. asks appropriate questions or seeks assistance when in doubt
					49. uses added knowledge and self-assessment to improve overall performance
					50. seeks out available resources, references and inservice education to enhance knowledge and skills and to keep up with new developments
					51. interprets and utilizes results of research performed by others

Competencies in management related to direct patient care

noness	minor	imp	v.imp	ess	
					52. supervises support PT personnel appropriately
					53. follows or recommends alternative operational procedures related to provision of patient care
					54. assumes the PT role (prevention, maintenance, consultation, community-based) appropriate to the health care setting
					55. is aware of functions of other disciplines involved in the patient care team and collaborates with these disciplines to provide comprehensive patient care

Key: noness - nonessential
minor - minor importance
imp - importance
v.imp - very important
ess - essential

Since the whole is not necessarily the sum of its parts, you are now asked to rate the importance of the global competencies which encompass the detailed competencies that you have just finished rating. Please circle the rating that you feel most indicates how important each global competency is in physical therapy practice.

noness	minor	imp	v.imp	ess	1. patient evaluation
noness	minor	imp	v.imp	ess	2. program planning
noness	minor	imp	v.imp	ess	3. implementation of the treatment program
noness	minor	imp	v.imp	ess	4. communication with the patient/family
noness	minor	imp	v.imp	ess	5. communication with other health care personnel
noness	minor	imp	v.imp	ess	6. documentation
noness	minor	imp	v.imp	ess	7. personal/professional behavior
noness	minor	imp	v.imp	ess	8. personal/professional growth
noness	minor	imp	v.imp	ess	9. management related to direct patient care

Please indicate in which specialty area or areas that you work.

___general ___cardiopulmonary ___private practice/outpatients
___orthopaedics ___rheumatology ___sports therapy
___neurology ___burns

APPENDIX C

Evaluation of Clinical Competence Form

Evaluation of Clinical Competence Form: Fourth Year PT Students

Student's number _____ Dates _____ to _____

Rater's number _____ Specialty of Placement _____

standards of performance - 0 not observed/not applicable
1 incompetent
2 minimally competent
3 competent
4 highly competent

Section I: Daily Rating of Patient Care Competencies

Daily ratings will commence on DAY 8 of the placement and will terminate after DAY 17 of the placement.

Daily ratings involve observation of the student during a patient evaluation or treatment, a team meeting, a program planning discussion or an evaluation of the student's charting. Following these daily observations, rate the subcompetencies under all the relevant major competency headings in Section I.

Choose the standard of performance from the four choices provided under each subcompetency which best describes the student's performance on that subcompetency. If a subcompetency has not been observed, choose the "not observed" option.

Adjacent to each subcompetency, please write in the number (0, 1, 2, 3, 4) representing the standard of performance that you have chosen. Write this number in the column corresponding to the day of the evaluation.

When making your choice of standard, base your decision on the following definition of terms:

assistance- Supervising therapist physically aids the student to ensure an acceptable level of competence

correction- Supervising therapist verbally corrects or instructs the student to ensure an acceptable level of competence

reminding- Supervising therapist makes suggestions or prods the student's memory to ensure in acceptable level of competence.
Supervising therapist responds to the student's questions or requests for guidance.

frequent- Student needs assistance/correction during more than 10% of the observation time

minimal- Student needs assistance/correction during 0-10% of the observation time

consistent- A high level of performance is seen during 95-100% of the observation time

slash (/)- OR
eg. anatomy/physiology = anatomy OR physiology

-if you have observed the student on one item from a list of items delineated by slashes, you determine the standard of performance by that one item.
-if you have observed the student on more than one item from a list of items delineated by slashes and one item is performed poorly, you determine the standard of performance in accordance with the most poorly performed item.

		R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
	Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
A. Patient Evaluation	Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts		
1. When gathering information relevant to the patient's status, the student's knowledge of related anatomy/physiology/pathology/evaluation procedures: 0 is not observed. 1 is not demonstrated when questioned. 2 is forthcoming only when questioned, i.e. has difficulty applying knowledge to gathering data. 3 is used to guide self in gathering data. 4 is used to justify choice and performance of evaluation procedures.																					
2. To gather patient information from medical records prior to the evaluation, the student: 0 is not observed. 1 does not gather patient information, unless told to do so. 2 gathers irrelevant/incomplete patient information, when no assistance/correction is given. 3 independently gathers relevant patient information but makes minor omission(s). 4 accurately and objectively gathers all pertinent information.																					
3. To gather information from a patient/family interview, the student: 0 is not observed. 1 does not conduct a patient interview, unless told to do so. 2 gathers irrelevant/incomplete information, when no assistance/correction is given. 3 independently gathers relevant information but makes minor omission(s). 4 accurately and systematically gathers all pertinent information.																					
4. When selecting PT evaluation procedures appropriate to the patient's disability, age and personality, the student: 0 is not observed 1 needs frequent correction to choose appropriate evaluation procedures. 2 chooses too many evaluation procedures. 3 makes minor omission(s) in selection of evaluation procedures. 4 chooses all appropriate evaluation procedures.																					
5. To evaluate the patient, the student: 0 is not observed. 1 needs frequent assistance/correction to perform selected evaluation procedures correctly and safely. 2 performs evaluation procedures correctly and safely but is awkward/inaccurate. 3 performs evaluation procedures safely and accurately but is slow. 4 performs a complete evaluation in a correct, safe, accurate and proficient manner.																					
6. To evaluate the appropriateness of the patient's appliances/equipment and/or the need for appliances/equipment, the student: 0 is not observed. 1 does not assess appliances/equipment needs, unless told to do so. 2 assesses appliances/equipment needs inappropriately, when no assistance/correction is given. 3 independently assesses appliances/equipment needs but does not make suitable recommendations. 4 assesses and advises patient/supervising therapist on the specifications, use and modification of appliances/equipment.																					
7. Throughout the evaluation, the student: 0 is not observed. 1 does not recognize signs of apprehension of the patient/family. 2 recognizes signs of apprehension of the patient/family but does not respond to ease it. 3 recognizes signs of apprehension of the patient/family and is reassuring. 4 eases apprehension of the patient/family by explaining aspects of evaluation procedures and findings, as appropriate.																					
8. To determine the effectiveness of the treatment program, the student: 0 is not observed. 1 does not re-evaluate at appropriate times, unless told to do so. 2 re-evaluates at appropriate times but performs incorrect/inappropriate procedures, when no assistance/correction given 3 performs appropriate re-evaluation procedures at appropriate times. 4 performs the re-evaluation in a standardized and quantitative manner for objectivity and accountability in addition to (3).																					

		R	F	M	T	W	R	F	M	T	W	R	F	M	T		F				
	Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20				
	Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts						
9.	Program Planning																				
	Program planning includes the evaluation of information gathered from medical records, patient/family and PT evaluation.																				
9.	When planning a treatment program, the student's knowledge of related anatomy/physiology/pathology:																				
	0 is not observed.																				
	1 is not demonstrated when questioned.																				
	2 is forthcoming only when questioned, i.e. has difficulty applying the knowledge to this planning process.																				
	3 is used to guide self in this initial planning process.																				
	4 is used to determine the implications of evaluation findings to P.T. treatment course/prognosis.																				
10.	To identify primary problems which may be alleviated by PT, the student:																				
	0 is not observed.																				
	1 needs frequent correction to identify primary problems.																				
	2 needs minimal correction to complete primary problem list.																				
	3 identifies all primary problems but not in priority.																				
	4 identifies all primary problems and in priority.																				
11.	To identify secondary problems which may be prevented by PT and/or require referral to other health care services, the student:																				
	0 is not observed																				
	1 needs frequent correction to identify secondary problems.																				
	2 needs minimal correction to complete secondary problem list.																				
	3 identifies all secondary problems but not in priority.																				
	4 identifies all secondary problems and in priority.																				
12.	To determine goals of PT treatment which are realistic to the probable discharge situation, the student:																				
	0 is not observed.																				
	1 needs frequent correction to determine short- and long-term goals.																				
	2 needs minimal correction to determine short-term goals but still needs frequent correction to determine long-term goals.																				
	3 determines short-term goals but needs minimal correction to determine long-term goals.																				
	4 determines both short- and long-term goals.																				
13.	When selecting PT treatment procedures appropriate to the patient's physical and psychological goals and needs, the student:																				
	0 is not observed.																				
	1 needs frequent correction to select appropriate treatment procedures.																				
	2 selects appropriate treatment procedures but needs minimal correction to select suitable sequence, frequency and duration of these procedures.																				
	3 selects appropriate treatment procedures including sequence, frequency and duration.																				
	4 suggests and defends alternative treatment procedures to alleviate primary problems and to meet PT goals.																				
14.	To justify choice of treatment procedures, the student:																				
	0 is not observed.																				
	1 does not demonstrate sound knowledge of physiological effects of treatment procedures when questioned.																				
	2 demonstrates sound knowledge of physiological effects only when questioned, ie. has difficulty applying knowledge to a rationale for treatment.																				
	3 utilizes sound knowledge of physiological effects as a sound rationale for treatment.																				
	4 utilizes sound knowledge to recommend or justify to the supervising therapist a change in the treatment plan, when in the student's judgement, it would be more beneficial.																				
15.	To involve the patient/family in the planning process, the student:																				
	0 is not observed.																				
	1 does not inform the patient/family of the goals and proposed treatment.																				
	2 informs the patient/family of the proposed treatment only.																				
	3 informs the patient/family of both the goals and proposed treatment.																				
	4 includes the patient/family in the determination of goals in addition to (3).																				

		R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
	Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
C. Implementation of the treatment program	Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts		
16. When implementing the PT treatment program, the student: 0 is not observed. 1 needs frequent assistance/correction to perform selected treatment procedures correctly and safely 2 performs selected treatment procedures correctly and safely but is awkward/ineffective. 3 performs selected treatment procedures correctly, safely and effectively but is slow. 4 performs selected treatment procedures in a correct, safe, effective and proficient manner.																					
17. To observe the patient's clinical signs and responses to treatment with respect to the patient's disability/age/tolerance, the student: 0 is not observed. 1 needs frequent correct to observe patient's signs and responses. 2 needs reminding to observe patient's signs and responses. 3 observes the patient's signs and responses consistently. 4 astutely observes and/or anticipates patient's signs and responses.																					
18. Following observations and ongoing evaluations, the student: 0 is not observed. 1 needs frequent assistance/correction to modify and/or progress treatment procedures appropriately. 2 needs reminding to modify and/or progress treatment procedures appropriately. 3 modifies and/or progresses treatment procedures appropriately but does not consistently obtain the patient's optimal performance. 4 modifies and/or progresses treatment procedures appropriately and consistently obtains the patient's optimal performance.																					
19. For preparation, care and tidiness of equipment and treatment area before and after each session, the student: 0 is not observed. 1 does not accept this responsibility. 2 needs reminding to accept this responsibility. 3 accepts this responsibility begrudgingly. 4 accepts this responsibility and recognizes its importance to department efficiency and appearance.																					
20. To manage treatment schedule, the student: 0 is not observed. 1 does not organize treatment schedule in collaboration with the patient/PT staff/other disciplines. 2 organizes treatment schedule and coordinates times with the patient/PT staff/other disciplines. 3 schedules self the appropriate amount of time for preparation, completion and documentation of treatment in addition to (2). 4 adjusts schedule to meet the daily unforeseen events as they occur.																					
21. To ensure safety when moving the patient and when applying equipment, modalities and treatment procedures, the student: 0 is not observed. 1 needs frequent assistance/correction to adhere to safety and comfort precautions. 2 needs reminding to adhere to safety and comfort precautions. 3 diligently adheres to safety and comfort precautions. 4 diligently ensures the patient's dignity as well as safety and comfort.																					
22. When applying techniques/moving patients and equipment, the student: 0 is not observed. 1 needs frequent assistance/correction to use correct body mechanics. 2 needs reminding to use correct body mechanics. 3 uses correct body mechanics. 4 obtains assistance from others/lifting equipment readily in addition to (3).																					
23. To prepare for discharge from PT services, the student's treatment: 0 is not observed. 1 does not include preparation for discharge, unless told to do so. 2 inadequately prepares the patient/family for discharge, when no assistance/correction is given. 3 adequately prepares the patient/family for discharge in collaboration with other disciplines, as necessary. 4 develops and teaches a suitable post-discharge program to the patient/family and includes referral to appropriate community and hospital resources.																					

	R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
D. Communication with the Patient/Family Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
Circle	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls	Ls		
29. To educate the patient/family regarding the patient's status, the patient's PT treatment and its importance, the student:																
0 is not observed.																
1 needs frequent assistance/correction to explain these aspects.																
2 needs reminding to explain these aspects to patient/family.																
3 explains these aspects to patient/family.																
4 explains these aspects plus explains progressions/changes in treatment provision to patient/family.																
25. To communicate at a level appropriate to the age, education and comprehension of the patient/family, the student:																
0 is not observed.																
1 needs frequent assistance/correction to adjust approach and level of communication to the patient/family.																
2 needs reminding to adjust approach and level of communication.																
3 adjusts approach and level of communication to relieve apprehension of the patient/family.																
4 demonstrates dynamic approach and adjusts level of communication to inspire confidence and motivation of the patient/family.																
26. To instruct the patient/family during treatment, the student:																
0 is not observed.																
1 gives instructions/demonstrations that are confusing to the patient.																
2 gives instructions/demonstrations that are clear but are too lengthy.																
3 gives clear and concise instructions/demonstrations.																
4 gives clear and concise instructions/demonstrations in a dynamic manner to gain optimal performance.																
27. To encourage and motivate the patient/family, the student:																
0 is not observed.																
1 does not use either corrective feedback or praise, unless told to do so.																
2 does not use either corrective feedback or praise optimally to enhance the patient's performance.																
3 uses corrective feedback optimally but needs reminding to use praise to optimize the patient's performance.																
4 uses both corrective feedback and praise for optimal patient performance.																
28. To develop an interpersonal relationship with the patient/family, the student:																
0 is not observed.																
1 does not exhibit a genuine interest and concern toward the patient/family.																
2 needs reminding to listen to their feelings/attitudes and to adapt treatment accordingly.																
3 adapts treatment in view of the feelings/attitudes expressed by the patient/family but needs reminding to set limits on passive or adversive behavior disruptive to treatment.																
4 listens and takes their feelings/attitudes into account but also sets appropriate limits on passive or adversive behavior disruptive to treatment.																
29. To assist the patient/family assume responsibility for implementing treatment, the student:																
0 is not observed.																
1 does not teach the patient/family ward or home therapy.																
2 needs reminding to teach patient/family ward or home therapy.																
3 teaches patient/family ward or home therapy.																
4 follows-up on the patient's/family's progress in addition to (3).																

	R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts		

E. Communication with other health care personnel

30. To orally communicate results of evaluation and treatment to supervising therapist/physician/team, the student:
- 0 is not observed.
- 1 does not show initiative to provide patient information.
- 2 shows initiative to provide patient information, but content and manner of oral report is inappropriate for intended audience.
- 3 presents oral reports in correct manner, but content is unclear or inappropriate for intended audience.
- 4 presents oral reports in content and manner appropriate for intended audience.

31. To establish professional relations as a member of the health care team, the student:
- 0 is not observed.
- 1 does not exhibit perceptiveness, tact and discretion in communication with others.
- 2 is aware of the functions of team members but does not communicate with tact and discretion.
- 3 is aware of the functions of team members and communicates with tact and discretion, but needs reminding to collaborate with the team members
- 4 communicates with perceptiveness, tact and discretion and collaborates fully with team to provide comprehensive care.

32. To assist other health care personnel implement aspects of the patient's PT treatment, the student:
- 0 is not observed.
- 1 needs frequent assistance/correction to teach methods of care to others.
- 2 needs reminding to teach methods of care to others.
- 3 teaches methods of care to others but at an unrealistic/inappropriate level
- 4 teaches methods of care to others at a realistic/appropriate level.

	R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts		

F. Documentation

33. To record the initial evaluation and treatment plan, the student:
- 0 is not observed.
- 1 needs frequent correction to document accurate and relevant evaluation data.
- 2 documents evaluation data accurately but needs minimal correction to ensure relevancy/completeness.
- 3 documents accurate, relevant and complete evaluation data but needs minimal correction to ensure conciseness and legibility.
- 4 documents evaluation data in a manner which is accurate, relevant, objective, complete, concise and legible.

34. To record progress notes, the student:
- 0 is not observed.
- 1 needs frequent correction to document accurate and relevant treatment data.
- 2 documents treatment data accurately but needs minimal correction to ensure relevancy/completeness.
- 3 documents accurate, relevant and complete treatment data but needs minimal correction to ensure conciseness and legibility.
- 4 documents treatment data in a manner which is accurate, relevant, complete, concise and legible.

Section II: Rating of Professional Competencies

Consider only the final week of the placement to rate the frequency with which the professional characteristics listed below are demonstrated by the student in your presence.

A student is competent if these characteristics, depicting professional behavior and growth, are USUALLY performed. It is anticipated that most students will fall in the USUALLY category; the remaining students will deviate toward either extreme of the scale:

Key: ALWAYS- no lapses occurred
USUALLY- 1 lapse occurred
INCONSISTENTLY- more than one lapse occurred
OCCASIONALLY- too many lapses occurred

Please place a check-mark in the column which best describes the frequency of the professional characteristics listed below as displayed by the student in the final week of the placement.

C. Professional Behavior	NOT OBSERVED	OCCASIONALLY	INCONSISTENTLY	USUALLY	ALWAYS
35. accepts appropriate responsibility for patient care					
36. respects confidentiality of patient information					
37. presents a professional appearance					
38. assumes PT functions appropriate to setting (prevention, maintenance, consultation, etc.)					
39. documents patient data and statistics according to the format and time limits of the facility					
40. is reliable regarding punctuality and duties					
41. handles personal and professional frustration appropriately					
D. Professional Growth	**NOT OBSERVED**	**OCCASIONALLY**	**INCONSISTENTLY**	**USUALLY**	**ALWAYS**
42. asks appropriate questions or seeks assistance when in doubt					
43. uses suggestions from supervising therapist and modifies behavior accordingly					
44. identifies own strengths and weaknesses					
45. uses self-assessment to improve performance					
46. seeks out available resources/references to enhance knowledge and skills and to keep up with new developments					
47. interprets and utilizes results of research					
48. displays a genuine interest in learning the specialty of this placement					

Number of student absences _____ 1/2 days.

APPENDIX D

Instructions to Administer the Evaluation of Clinical Competence

DIRECTIVE

Evaluation of Clinical Competence Form (ECC): Fourth Year PT Students

This instrument is designed to evaluate clinical competence as demonstrated by fourth year PT students throughout a placement according to four standards.

The instrument contains two sections:

Section I: Daily Ratings of Patient Care Competencies

Students are rated daily on their direct patient care skills in order to determine by the end of the placement a rating of clinical competence, which reflects their performance throughout the duration of the placement.

Section I contains six major competency areas: Patient evaluation, Program planning, Implementation of treatment, Communication with patient/family, Communication with other health care personnel and Documentation.

Section II: Rating of Professional Competencies

The purpose of this rating is to determine the frequency with which professional characteristics are demonstrated by the student in the final week of placement.

Section II contains one major competency areas: Professional behavior and growth.

Instructions for Daily Ratings: Section I of ECC Form

A. General Instructions

1. Two raters observe and rate the student once daily throughout the placement. The first rater is the student's supervising therapist. The second rater is assigned to the student for daily observations and ratings only. The student is introduced to the second rater on DAY 1 of the placement.

2. Daily ratings commence on DAY 4 of the placement and terminate after DAY 17 of the placement. A total of 14 daily ratings is possible if the student and/or raters are not absent.

B. Observation Instructions

1. By DAY 4 the student will prepare a list of patients that he/she would like to treat and/or discuss in the presence of either rater. This list is updated by the student periodically on the request of the first rater or on the student's own volition.

2. The two raters meet at the beginning of each day from DAY 4 to DAY 17 of the placement to decide:

   a. which of the student's patients from the list will be used for observation on that day
   b. which method of observation will be used on that day.

   The methods of observation include the following:

   i. a patient treatment or evaluation
   ii. a team meeting
   iii. a discussion of program planning
   iv. an evaluation of the student's documentation in a patient's chart.

3. Guidelines for determining which method of observation is to occur each day are the following:

   a. select the method of observation which is most likely to occur that day
   b. vary selection of observation from day to day so that each major competency area is observed a minimum of two times at different intervals throughout the placemment
   c. vary selection of patient from day to day so that the student is observed with different patients over the placement.

4. At the daily meeting from DAY 4 to DAY 17 the two raters also determine whether observation on that day is conducted by the raters together or separately.

*** 5. Observation by Raters Together***

   a. Observations by both raters together is the preferred and recommended method.
   b. The two raters agree upon a time to observe the student together. The student is then informed of the patient involved and the observation time. The onus is on all parties to be prepared for observation at this pre-determined time.
   c. Joint observation by the two raters is essential for observation of the student during: i. a team meeting
      ii. a discussion of program planning.

6. Observation by Raters Separately

   a. When joint observation by raters is NOT feasible in your setting, the two raters can observe the student separately particularily with regard to:
      i. a patient evaluation
      ii. a patient treatment
      iii. an evaluation of the student's documentation in a patient's chart

b. If it is necessary to conduct separate observations, each rater makes a 10-15 minute appointment with the student to observe him/her with any one of the patients listed by the student. The onus is on all parties to be prepared for observation at the pre-determined times.

7. If at all possible, raters observe the student together with the same patient. However, it is imperative that both raters:

   a. observe the student's performance for the same amount of time, eg. 10-15 minutes per day
   b. observe performance either continuously or by sampling (eg. raters sample performance by observing for 5 minutes at 5 minute intervals over a 30 minute evaluation or treatment session)
   c. observe and rate all the major competency areas in Section I of the form at least two times.

8. Guidelines for lessening the student's anxiety during the scheduled observations are:

   a. The student must be made to feel as comfortable as possible by making the observations informal and by having no evaluation forms in view.
   b. The student must realize that observations are for the purpose of evaluating how well the form measures clinical competence. So that that student may also benefit from these observations, both the first and second raters may use the observation time to provide the student with a positive learning experience. Both raters, therefore, ask or respond to questions, make corrections or suggestions and provide assistance, as necessary. The raters also provide praise and feedback to assist the student to attain his/her optimal level of performance. (If you prefer not to correct the student in front of the patient, count the number of times that you would have made corrections in order to determine a rating).
   c. The second rater only interacts with the student during these scheduled observation times. Since the second rater does not necessarily know the patient, caution is advised.
   d. The student and rater understand that any information gained during these observations will not be utilized to write up the U of A Evaluation Form and will not unjustifiably influence the student's grade in this placement.

C. Rating Instructions

1. Immediately or as soon as possible after observing the student's performance, the two raters independently rate the student's performance on the subcompetencies under all of the relevant major competency headings in Section I of the form.

2. No joint discussions or joint decisions are made by the two raters during either observation or rating of the student's performance.

3. Using Section I of the ECC Form, the rater independently chooses that standard of performance (1, 2, 3, 4) from the four choices provided under each subcompetency which best describes the student's performance on the subcompetency.

4. If a subcompetency has not been observed, the rater chooses that "not observed" option (0).

5. Adjacent to each subcompetency, the rater writes in the number (0,1,2,3,4) representing the standard of performance that the rater has chosen. This number is written in the column corresponding to the day of the evaluation.

6. When choosing a standard of performance, a rater must base his/her decision on the definition of terms provided on p. 1 of the evaluation form.

7. At the top of the same column as the daily rating, circle either the 't' (together) or the 's' (separate) to indicate how the observation was conducted on that day.

Instructions for Final Ratings: A. Section I of ECC Form

1. Final ratings of Section I are completed along with Section II according to your form completion sequence anytime between DAY 18 and DAY 20.

2. Between DAY 18 and DAY 20, the raters independently review the student's daily ratings and, then, independently choose a rating which best describes the student's overall performance in each subcompetency. This number is written in the column corresponding to DAY 20. Both raters must attempt to give an overall rating of all observed subcompetencies in Section I, even if a subcompetency was observed only 1-2 times.

B. Section II of ECC Form

1. See page 7 of the evaluation form.

2. Section II is completed along with Section I according to your form completion sequence anytime between DAY 18 and DAY 20.

Thank you for your efforts!

Joan Loomis

Joan Loomis

APPENDIX E

Informed Consent Forms and Accompanying Letters

1. Clinical Affiliations
2. Raters
3. Students
4. Clinical Affiliations and Raters Outside Edmonton

The University of Alberta

Department of Physical Therapy
Faculty of Rehabilitation Medicine

Edmonton, Alberta, Canada T6G 2G4
Telephone (403) 432-5983

Joan Loomis will be conducting research, in conjunction with the Department of Physical Therapy at the University Alberta, on an evaluation instrument that she developed to evaluate clinical competence of physical therapy students. The development of a valid and reliable evaluation of clinical competence has future implications for students, physical therapy educators, employers of new graduates and professional growth. It is hoped that your physical therapy department will agree to participate in this much needed and worthwhile study.

Enclosed are two informed consent forms: 1) explanation of field testing and 2) consent form. The explanation of field testing outlines the rationale of the study, the design of the evaluation instrument, and the method of administering this evaluation in order to test its validity and reliability. Please read the explanation carefully and contact Joan Loomis (432-2071) if you have any further questions. If you are able to assist us with this study, please complete the consent form and return to Joan Loomis at the Department of Physical Therapy, University of Alberta. Furthermore, if you would appoint a liaison person, such as a clinical instructor, with whom Joan may communicate regarding the administration of this evaluation with fourth year students in January and March, 1983 and with third year students in February, 1983 it would be greatly appreciated.

I would like to add that, if your department consents to participate in this study, the physical therapists who normally supervise students in your department will be

informed as to their role in the study; and they, too, will be asked to sign a consent form if they are willing to evaluate students using this instrument. It should be noted that data gathered during this study will not be used to determine students' grades; the existing evaluation form will have to be completed concurrently for grading purposes.

Your participation in this research study will be greatly appreciated by the Department.

Thank you.

Sincerely,

David J. Magee, Ph.D.
Associate Professor and
Chairman

DJM/dft

Informed Consent Form

Evaluation of Clinical Competence of Physical Therapy Students

Explanation of Field Testing (retained by clinical affiliation and rater)

In the clinical education program at the University of Alberta, fourth year physical therapy (PT) students are expected to achieve the competencies required for adequate performance upon entry into the physical therapy profession. The narrative evaluation currently in use, however, tends to be susceptible to rater biases and does not assess if these desired competencies have, in fact, been achieved. A clinical evaluation instrument should be developed which objectively determines if a student can perform entry-level competencies adequately as judged by specific standards of performance. Furthermore, systematic studies have not been conducted to determine the validity and reliability of evaluations reported in the literature and professional documents. None of these evaluations is well-designed or assess clinical competence.

An instrument, Evaluation of Clinical Competence, has been developed by the investigator which evaluates clinical competence as demonstrated by a fourth year PT student according to the standards of performance expected by completion of the program. Hence, the competencies to be evaluated are clearly defined and the four standards of performance are highly specific, as one means of ensuring accuracy and reliability of the evaluation.

The study in which you are being requested to participate is an attempt to validate the Evaluation of Clinical Competence instrument. An example of a competency and its standards is the following:

When implementing the PT treatment program, the student:

- is not observed
- needs frequent assistance/correction to perform selected treatment procedures correctly and safely
- performs selected treatment procedures correctly and safely but is awkward and/or ineffective
- performs selected treatment procedures correctly, safely and effectively but is slow
- performs selected treatment procedures in a correct, safe, effective and proficient manner.

Clinical affiliations and raters agreeing to participate in this study will evaluate fourth year PT students on two different clinical placements (November, 1982 and March, 1983) using two evaluation forms:

1. The Evaluation of Clinical Competence and
2. The Hiring Rating Form which indicates a rater's willingness to employ the student.

Third year PT students will be evaluated during one clinical placement (February, 1983) using the same two evaluation forms.

Each student in both third and fourth year is evaluated by two therapists assigned to supervise the student at the clinical placement(s). The first rater is designated as the student's primary resource person and supervisor. The second rater may be a clinical instructor, team supervisor or another therapist working in close proximity and in the same specialty area who has not been assigned another student in the same year to supervise directly.

Raters are requested to observe competencies on a number of occasions and, if feasible, with different patients over the four weeks of the placement. Raters will observe at least one major competency area per day, one which is mutually agreed upon by both the student and raters; then raters will enter the student's subscores on a progressive evaluation sheet. The final score given to each competency will be calculated from the multiple entries throughout the clinical placement.

In November, 1982 the Evaluation of Clinical Competence form is administered to fourth year PT students to obtain data by which to analyze and revise the evaluation form. In February and March 1983 the revised version of the Evaluation of Clinical Competence is administered to third and fourth year students respectively to determine its validity and inter-rater reliability.

At the completion of the study students and raters will be asked to answer a short questionnaire about their feelings toward the evaluation form, its advantages and disadvantages.

You have the right to withdraw from participation at any time during the study. No records which would permit your identification will be made public or used in a research article without your written consent. No information gathered in the study will be used to determine the students' clinical grades; the existing evaluation form will be completed concurrently and utilized for grading purposes. After completion of the study, students who request feedback will receive by mail a copy of their results on the revised version of the Evaluation of Clinical Competence only.

In the event that questions arise concerning the study, please feel free to contact Joan Loomis (432-5968).

Informed Consent Form

Evaluation of Clinical Competence of Physical Therapy Students

Rater Consent (retained by the investigator)

I _____ do hereby
please print name

agree to participate as a subject in the study entitled "An Evaluation of Clinical Competence of Physical Therapy Students" to be conducted by Joan Loomis. The nature of this study has been explained to me. I understand that the results will not be used for the purpose of determining students' clinical grades and that students will receive feedback on their results from the revised evaluation form only. I have been advised that I may withdraw from participation at any time.

_____ _____
Rater's signature Date

_____ _____
Address Phone No.

I was a witness to the rater's signature.

_____ _____
Witness's signature Date

Please return to the investigator:

Joan Loomis
Department of Physical Therapy
210 Corbett Hall
University of Alberta
Edmonton, Alberta
T6G 2G4

Informed Consent Form

Evaluation of Clinical Competence of Pysical Therapy Students

Consent of the clinical affiliation (retained by investigator)

The Physiotherapy Department at the _____
please print

_____ does hereby agree to
name of institution

participate in the study entitled "An Evaluation of Clinical Competence of Physical Therapy Students" to be conducted by Joan Loomis. The nature of this study has been explained. It is understood that the results will not be used for the purpose of determining clinical grades and that students will receive feedback on their results from the revised evaluation form only. I have been advised that I may withdraw from participation at any time.

_____ _____
Director of the Physiotherapy Department Date

_____ _____
Address Phone No.

I was a witness to the above signature.

_____ _____
Witness's signature Date

Please return to the investigator:

Joan Loomis,
Department of Physical Therapy
210 Corbett Hall
University of Alberta
Edmonton, Alberta
T6G 2G4

Informed Consent Form

Evaluation of Clinical Competence of Physical Therapy Students

Explanation of Field Testing (retained by the student)

In the clinical education program at the University of Alberta, fourth year physical therapy (PT) students are expected to achieve the competencies required for adequate performance upon entry into the physical therapy profession. The narrative evaluation currently in use, however, tends to be susceptible to rater biases and does not assess if these desired competencies have, in fact, been achieved. A clinical evaluation instrument should be developed which objectively determines if a student can perform entry-level competencies adequately as judged by specific standards of performance. Furthermore, systematic studies have not been conducted to determine the validity and reliability of evaluations reported in the literature and professional documents. None of these evaluations is well-designed or assess clinical competence.

An instrument, Evaluation of Clinical Competence, has been developed by the investigator which evaluates clinical competence as demonstrated by a fourth year PT student according to the standards of performance expected by completion of the program. Hence, the competencies to be evaluated are clearly defined and the four standards of performance are highly specific, as one means of ensuring accuracy and reliability of the evaluation.

The study in which you are being requested to participate is an attempt to validate the Evaluation of Clinical Competence instrument. An example of a competency and its standards is the following:

When implementing the PT treatment program, the student:

- is not observed
- needs frequent assistance/correction to perform selected treatment procedures correctly and safely
- performs selected treatment procedures correctly and safely but is awkward and/or ineffective
- performs selected treatment procedures correctly, safely and effectively but is slow
- performs selected treatment procedures in a correct, safe, effective and proficient manner.

Fourth year students agreeing to participate in this study will be evaluated in two different clinical placements (November 1982, and February 1983 for students outside Edmonton or March 1983 for students in Edmonton) using two evaluation forms:

1. the Evaluation of Clinical Competence
2. the Hiring Rating Form which indicates a rater's

willingness to employ the student.

Third year students agreeing to participate in this study will be evaluated in one clinical placement (February 1983) using the same two evaluation forms.

Each student is evaluated by two therapists assigned to supervise the student at the clinical placement(s). The first rater is designated as the student's primary resource person and supervisor. The second rater may be a clinical instructor, team supervisor or another therapist working in close proximity and in the same specialty area who has not been assigned another student in the same year to supervise directly.

Raters are requested to observe competencies on a number of occasions and, if feasible, with different patients over the four weeks of the placement. Raters will observe at least one major competency area per day, one which is mutually agreed upon by both the student and raters; then raters will enter the student's subscores on a progressive evaluation sheet. The final score given to each competency will be calculated from the multiple entries throughout the clinical placement.

In November 1982 the Evaluation of Clinical Competence form is administered to fourth year PT students to obtain data by which to analyze and revise the evaluation form. In February and March, 1983 the revised version of the Evaluation of Clinical Competence is administered to third and fourth year PT students respectively to determine its validity and inter-rater reliability.

At the completion of the study students and raters will be asked to answer a short questionnaire about their feelings toward the evaluation form, its advantages and disadvantages.

You have the right to withdraw from participation at any time during the study. No records which would permit your identification will be made public or used in a research article without your written consent. No information gathered in the study will be used to determine a student's clinical grade; the existing evaluation form will be completed concurrently and utilized for grading purposes. If you would like feedback after the study, please leave a self-addressed envelope with the investigator. Only the results from the revised version of the evaluation will be mailed to you as soon as possible following completion of the study.

In the event that questions arise concerning the study, please feel free to contact Joan Loomis (432-5968).

Informed Consent Form

Evaluation of Clinical Competence of Physical Therapy Students

Student Consent (retained by the investigator)

I _____ do hereby
please print name

agree to participate as a subject in the study entitled "Evaluation of Clinical Competence of Physical Therapy Students" to be conducted by Joan Loomis. The nature of this study has been explained to me. I understand that the results will not be used for the purposes of determining clinical grades and that I will receive feedback, if I request it, on my results from the revised evaluation form only. I have been advised that I may withdraw from participation at any time.

_____ _____
Student's signature Date

_____ _____
Address Phone No.

I was a witness during the explanation referred to above and to the student's signature.

_____ _____
Witness's signature Date

Please return to the investigator:

Joan Loomis
Department of Physical Therapy
210 Corbett Hall
University of Alberta
Edmonton, Alberta
T6G 2G4

October 4, 1982

Recently, you kindly agreed to provide a clinical placement for a fourth year physical therapy student from the University of Alberta from January 4 to February 11, 1983. I am writing to ask you if you would also consider participation in a research study that is being conducted with fourth year PT students at the University of Alberta while in their clinical placements during the 1982-83 academic year.

Participation by your department in this study requires two supervising therapists to evaluate the student's performance during the last two weeks of the placement (January 31 to February 11, 1983) using an evaluation form which is being developed and tested by me. This letter continues to explain the study in more detail, to provide informed consent forms and to give instructions for your inclusion in the study.

This study is thesis research, with the approval of the Department of Physical Therapy at the University of Alberta and my thesis committee, on an evaluation instrument that I am developing to evaluate clinical competence of PT students. The development of a valid and reliable evaluation of clinical competence has future implications for students, physical therapy educators and employers of new graduates. It is hoped that your physical therapy department will agree to participate in this much needed and worthwhile study.

Enclosed are two informed consent forms: 1) an explanation of field testing and 2) consent forms for the clinical affiliaton and raters outside Edmonton.

The explanation of field testing outlines the rationale of the study, the design of the evaluation instrument and the method of administering this evaluation instrument in order to test its validity and reliability. Please read the explanation carefully and contact me (432-2071) if you have any questions. If you feel that your department is able to assist me with this study, please complete the consent form (for clinical affiliation outside Edmonton) and return to Joan Loomis at the Department of Physical Therapy, University of Alberta.

If your department consents to participate in this study, two physical therapists need to be assigned to evaluate the student between Jan. 31 and Feb. 11, 1983. The first rater will be the therapist assigned to supervise the student throughout the placement; the second rater is assigned to observe and evaluate the student during the two week duration of the study only. These two therapists are, then, asked by you to read the explanation and sign the informed consent form. Two informed consent forms (for raters at clinical affiliations outside Edmonton) are enclosed. Extra consent forms are also enclosed in case of late changes necessitating a change of raters. Please return the raters' completed consent forms to me along with your department's consent form.

At first glance, it may seem difficult to provide a second rater to evaluate a student. However, the recently completed pilot project indicated that the amount of time involved over and above the time normally expected in supervision of a student is approximately 15 minutes per day by the second rater. In your case it would be 15 minutes daily for two weeks.

It should be noted that data gathered during this study will not be used to determine the student's grade; the existing U. of A. evaluation form will have to be completed concurrently for grading purposes.

If you participate in this study, I will be sending you the new evaluation form and its instructions in early January, 1983.

The Clinical Coordinator at the U. of A. has asked me to tell you that he will be sending the evaluation materials currently required by U. of A. in early December.

Your participation in this research study will be greatly appreciated by myself and the Department of Physical Therapy at the University of Alberta.

Sincerely,

Joan Loomis

Joan Loomis
Assistant Professor
Physical Therapy
University of Alberta

Informed Consent Form

Evaluation of Clinical Competence of Physical Therapy Students

Explanation of Field Testing (retained by the rater and clinical affiliation outside Edmonton)

In the clinical education program at the University of Alberta, fourth year physical therapy (PT) students are expected to achieve the competencies required for adequate performance upon entry into the physical therapy profession. The narrative evaluation currently in use, however, tends to be susceptible to rater biases and does not assess if these desired competencies have, in fact, been achieved. A clinical evaluation instrument should be developed which objectively determines if a student can perform entry-level competencies adequately as judged by specific standards of performance. Furthermore, systematic studies have not been conducted to determine the validity and reliability of evaluations reported in the literature and professional documents. None of these evaluations is well-designed or assess clinical competence.

An instrument, Evaluation of Clinical Competence, has been developed by the investigator which evaluates clinical competence as demonstrated by a fourth year PT student according to the standards of performance expected by completion of the program. Hence, the competencies to be evaluated are clearly defined and the four standards of performance are highly specific, as one means of ensuring accuracy and reliability of the evaluation.

The study in which you are being requested to participate is an attempt to validate the Evaluation of Clinical Competence instrument. An example of a competency and its standards is the following:

When implementing the PT treatment program, the student:

- is not observed
- needs frequent assistance/correction to perform selected treatment procedures correctly and safely
- performs selected treatment procedures correctly and safely but is awkward and/or ineffective
- performs selected treatment procedures correctly, safely and effectively but is slow
- performs selected treatment procedures in a correct, safe, effective and proficient manner.

Clinical affiliations and raters agreeing to participate in this study will evaluate fourth year PT students in the clinical placement between January 31 and February 11, 1983 using two evaluation forms:

1. the Evaluation of Clinical Competence

2. the Hiring Rating Form which indicates a rater's willingness to employ the student

The revised version of the Evaluation of Clinical Competence is administered to fourth year students at this time to determine its validity and inter-rater reliability.

Each student in both third and fourth year is evaluated by two therapists assigned to supervise the student at the clinical placement(s). The first rater is designated as the student's primary resource person and supervisor. The second rater may be a clinical instructor, team supervisor or another therapist working in close proximity and in the same specialty area who has not been assigned another student in the same year to supervise directly.

Raters are requested to observe competencies on a number of occasions and, if feasible, with different patients over the four weeks of the placement. Raters will observe at least one major competency area per day, one which is mutually agreed upon by both the student and raters; then raters will enter the student's subscores on a progressive evaluation sheet. The final score given to each competency will be calculated from the multiple entries throughout the clinical placement.

At the completion of the study students and raters will be asked to answer a short questionnaire about their feelings toward the evaluation form, its advantages and disadvantages.

You have the right to withdraw from participation at any time during the study. No records which would permit your identification will be made public or used in a research article without your written consent. No information gathered in the study will be used to determine the students' clinical grades; the existing evaluation form will be completed concurrently and utilized for grading purposes. After completion of the study, students who request feedback will receive by mail a copy of their results on the revised version of the Evaluation of Clinical Competence only.

In the event that questions arise concerning the study, please feel free to contact Joan Loomis (432-5968).

APPENDIX F

Hiring Rating Form

Student's Number_____

Rater's Number_____

HIRING RATING FORM

QUESTION: If you had a position to fill, would you hire this student?

ANSWER:

_____1. I would prefer not to hire this student for our setting.

_____2. I would not hire this student until he/she has developed greater professional competence.

_____3. I would consider hiring this student but would have some reservations at this time.

_____4. I would favorably consider hiring this student but would expect to provide continued supervision for some time.

_____5. I would definitely hire this student and expect him/her to work independently within a very short time.

N.B. Answer the question with reference to the student's competence in your setting, not according to your department policy on hiring.

APPENDIX G

Narrative Clinical Evaluation Used by the Department of Physical Therapy at the University of Alberta

Faculty of Rehabilitation Medicine
Department of Physical Therapy

University of
Alberta

SENIOR PHYSICAL THERAPY CLINICAL EVALUATION

STUDENT'S NAME: _____

INSTITUTION: _____

SUPERVISING THERAPIST/S: _____

PLACEMENT DATES: FROM: _____ TO: _____

ABSENCES: _____ 1/2 days

PLEASE READ DIRECTIVE BEFORE USING THIS FORM

GUIDELINES:

EXCEPTIONAL
ABOVE AVERAGE
ACCEPTABLE
UNACCEPTABLE
NOT APPLICABLE (N/A)

I. THEORY: LEVEL of KNOWLEDGE and APPLICATION of THEORY to PRACTICE

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

II. PATIENT ASSESSMENT - SELECTION of PROCEDURES, TECHNIQUE, FINDINGS

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

III. TREATMENT PLANNING

A. AIM SETTING

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

B. SELECTION of APPROPRIATE PROCEDURES

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

C. OBSERVATION of PATIENT RESPONSE and APPROPRIATE MODIFICATION

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

IV. TREATMENT

A. SAFETY (of patient and student)

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

B. APPROACH to PATIENT

(i) Explanation, Instruction, Demonstration

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

(ii) Ability to gain patients confidence and motivation

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

C. ORGANIZATION - of time, cubicle, apparatus

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

D. PROCEDURES

(i) Manual

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

(ii) Electrical

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE N/A

COMMENTS:

(iii) Mechanical - use of apparatus

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE N/A

COMMENTS:

(iv) Thermal

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE N/A

COMMENTS:

V. COMMUNICATION WITH STAFF

A. VERBAL

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

B. WRITTEN

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

VI. PROFESSIONAL ATTITUDE - Reliability, Ethical and General Behaviour

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

VII. STUDENT'S RESPONSE TO SUPERVISION AND CRITICISM

EXCEPTIONAL ABOVE AVERAGE ACCEPTABLE UNACCEPTABLE

COMMENTS:

VIII. EXPERIENCE RECORD

A. CONDITIONS TREATED/OBSERVED	B. ROUNDS/CLINICS	C. OTHER

IX. ADDITIONAL COMMENTS IF DESIRED

X. THIS STUDENT HAS BEEN CREDITED WITH SUCCESSFUL COMPLETION OF THIS PLACEMENT.

YES	
NO	

PLEASE PLACE CHECK MARK (✔) IN APPROPRIATE BOX.

STUDENT'S SIGNATURE: _____

SUPERVISING THERAPIST/S SIGNATURE/S: _____

CLINICAL SUPERVISOR OR HEAD
of DEPARTMENT'S SIGNATURE: _____

DATE OF SIGNING: _____

APPENDIX H

Form Completion Sequence

Form Completion Sequence

*** Importance of Instructions ***

Since each evaluation form requests slightly different kinds of information, it is important to treat them separately. Adherence to the form completion sequence will ensure that information from one form will NOT unjustifiably influence the information on another form.

*** Instructions to Raters ***

1. Please complete the three evaluation forms between DAY 18 and DAY 20 of the placement in the sequence given:

FORM COMPLETION SEQUENCE

1. U. of A. Anecdotal Form 2. Evaluation of Clinical Competence Form (Sections I and II) 3. Hiring Rating Form

2. Start with FORM 1. When FORM 1 is completed to your satisfaction, proceed to FORM 2. When FORM 2 is completed satisfactorily, finish with FORM 3.

3. Complete all three evaluation forms INDEPENDENTLY.

4. After an evaluation form is completed, DO NOT LOOK AT IT AGAIN.
   *** NEVER REFER BACK to earlier ratings
   *** NEVER CHANGE earlier ratings

5. You provide the student with feedback on the results of the U. of A. Anecdotal Evaluation Form ONLY.
   *** DO NOT GIVE THIS FEEDBACK TO THE STUDENT UNTIL ALL THREE FORMS HAVE BEEN COMPLETED.

6. Turn in all three evaluation forms to the Clinical Instructor.

Thank you for your help

Joan

Joan Loomis

Form Completion Sequence

*** Importance of Instructions ***

Since each evaluation form requests slightly different kinds of information, it is important to treat them separately. Adherence to the form completion sequence will ensure that information from one form will NOT unjustifiably influence the information on another form.

*** Instructions to Raters ***

1. Please complete the three evaluation forms between DAY 18 and DAY 20 of the placement in the sequence given:

FORM COMPLETION SEQUENCE

1. Hiring Rating Form 2. U. of A. Anecdotal Form 3. Evaluation of Clinical Competence Form (Section I and II)

2. Start with FORM 1. When FORM 1 is completed to your satisfaction, proceed to FORM 2. When FORM 2 is completed satisfactorily, finish with FORM 3.

3. Complete all three evaluation forms INDEPENDENTLY.

4. After an evaluation form is completed, DO NOT LOOK AT IT AGAIN.
   *** NEVER REFER BACK to earlier ratings
   *** NEVER CHANGE earlier ratings

5. You provide the student with feedback on the results of the U. of A. Anecdotal Evaluation Form ONLY.
   *** DO NOT GIVE THIS FEEDBACK TO THE STUDENT UNTIL ALL THREE FORMS HAVE BEEN COMPLETED.

6. Turn in all three evaluation forms to the Clinical Instructor.

Thank you for your help

Joan

Joan Loomis

Form Completion Sequence

*** Importance of Instructions ***

Since each evaluation form requests slightly different kinds of information, it is important to treat them separately. Adherence to the form completion sequence will ensure that information from one form will NOT unjustifiably influence the information on another form.

*** Instructions to Raters ***

1. Please complete the three evaluation forms between DAY 18 and DAY 20 of the placement in the sequence given:

FORM COMPLETION SEQUENCE

1. Evaluation of Clinical Competence Form (Section I and II) 2. Hiring Rating Form 3. U. of A. Anecdotal Form

2. Start with FORM 1. When FORM 1 is completed to your satisfaction, proceed to FORM 2. When FORM 2 is completed satisfactorily, finish with FORM 3.

3. Complete all three evaluation forms INDEPENDENTLY.

4. After an evaluation form is completed, DO NOT LOOK AT IT AGAIN.
   *** NEVER REFER BACK to earlier ratings
   *** NEVER CHANGE earlier ratings

5. You provide the student with feedback on the results of the U. of A. Anecdotal Evaluation Form ONLY.
   *** DO NOT GIVE THIS FEEDBACK TO THE STUDENT UNTIL ALL THREE FORMS HAVE BEEN COMPLETED.

6. Turn in all three evaluation forms to the Clinical Instructor.

Thank you for your help

Joan

Joan Loomis

APPENDIX I

Revised Evaluation of Clinical Competence Form

Evaluation of Clinical Competence Form: Fourth Year PT Students

Student's number _____ Dates _____ to _____ Number of absences _____ 1/2 days

Rater's number _____ Specialty of Placement _____

Section I: Daily Rating of Patient Care Competencies

Daily ratings will commence on DAY 4 of the placement and will terminate after DAY 17 of the placement. The final rating will be made between DAY 18 and DAY 20.

Daily ratings involve observation of the student during a patient evaluation or treatment, a team meeting, a program planning discussion or an evaluation of the student's charting. Following these daily observations, rate the subcompetencies under all the relevant major competency headings in Section I.

Choose the standard of performance from the four choices provided under each subcompetency which best describes the student's performance on that subcompetency. If a subcompetency has not been observed, choose the "not observed" option.

Adjacent to each subcompetency, please write in the number (0, 1, 2, 3, 4) representing the standard of performance that you have chosen. Write this number in the column corresponding to the day of the evaluation.

When making your choice of standard, base your decision on the following definition of terms:

assistance- Supervising therapist physically aids the student to ensure an acceptable level of competence

correction- Supervising therapist verbally corrects or instructs the student to ensure an acceptable level of competence

reminding- Supervising therapist makes suggestions or prods the student's memory to ensure in acceptable level of competence.
Supervising therapist responds to the student's questions or requests for guidance.

frequent- Student needs assistance/correction during more than 10% of the observation time

minimal- Student needs assistance/correction during 0-10% of the observation time

consistent- A high level of performance is seen during 95-100% of the observation time

slash (/)- OR
eg. anatomy/physiology = anatomy OR physiology

-if you have observed the student on one item from a list of items delineated by slashes, you determine the standard of performance by that one item.
-if you have observed the student on more than one item from a list of items delineated by slashes and one item is performed poorly, you determine the standard of performance in accordance with the most poorly performed item.

	R	F	M	T	W	R	F	M	T	W	R	F	M	T		F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17		20
Circle	t/	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts		

A. Patient Evaluation

1. When gathering data relevant to the patient's status, the student's knowledge of related anatomy/physiology/pathology/evaluation procedures:

   0 Is not observed/is not required to perform.
   1 Is not adequate when questioned.
   2 Is adequate but questions are needed to enable the student to apply knowledge to the data-gathering process.
   3 Is used to guide self through the data-gathering process.
   4 Is used to justify the choice and performance of data-gathering procedures.

2. To gather patient data from medical records prior to the PT evaluation, the student:

   0 Is not observed/is not required to perform.
   1 does not gather patient information, unless told to do so.
   2 gathers irrelevant/incomplete patient information, when no assistance/correction is given.
   3 independently gathers relevant patient information but makes minor omission(s).
   4 accurately and objectively gathers all pertinent information.

3. To gather data from a patient/family interview, the student:

   0 Is not observed/is not required to perform.
   1 does not conduct a patient interview, unless told to do so.
   2 gathers irrelevant/incomplete information, when no assistance/correction is given.
   3 independently gathers relevant information but makes minor omission(s).
   4 accurately and systematically gathers all pertinent information.

4. When selecting PT evaluation procedures appropriate to the patient's disability, age and personality, the student:

   0 Is not observed/is not required to perform.
   1 needs frequent correction to choose appropriate evaluation procedures.
   2 needs minimal correction to choose appropriate evaluation procedures.
   3 makes minor omission(s) in choosing evaluation procedures.
   4 chooses all appropriate evaluation procedures.

5. When evaluating the patient, the student:

   0 Is not observed/is not required to perform.
   1 needs frequent assistance/correction to perform selected evaluation procedures safely.
   2 performs evaluation procedures safely but needs minimal assistance/correction to ensure accuracy.
   3 performs evaluation procedures safely and accurately but is awkward/makes minor errors in procedure.
   4 performs a complete evaluation in a safe, accurate and proficient manner.

6. Throughout the evaluation, the student:

   0 Is not observed/is not required to perform.
   1 does not observe signs of apprehension of the patient/family.
   2 observes signs of apprehension of the patient/family but does not respond to ease it.
   3 observes signs of apprehension of the patient/family and is reassuring.
   4 eases apprehension of the patient/family by explaining aspects of evaluation procedures and findings, as appropriate.

Comments:

	R	F	M	T	W	R	F	M	T	W	R	F	M	T	F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20
Circle	In	In	In	In	In	In	In	In	In	In	In	In	In	In	

8. Program Planning

Program planning includes the evaluation of data gathered from medical records, patient/family and PT evaluation.

7. When planning a treatment program, the student's knowledge of related anatomy/physiology/pathology:

0 is not observed/is not required to perform.
1 is not adequate when questioned.
2 is adequate but questions are needed to enable the student to apply knowledge to this planning process.
3 is used to guide self through this planning process.
4 is used to determine the implications of evaluation findings to PT treatment course/prognosis.

8. To identify primary problems which may be alleviated by PT, the student:

0 is not observed/is not required to perform.
1 needs frequent correction to identify primary problems.
2 needs minimal correction to complete primary problem list.
3 identifies all primary problems but not in priority.
4 identifies all primary problems and in priority.

9. To identify secondary problems which may be presented by PT and/or require referral to other health care services, the student:

0 is not observed/is not required to perform.
1 needs frequent correction to identify secondary problems.
2 needs minimal correction to complete secondary problem list.
3 identifies all secondary problems but not in priority.
4 identifies all secondary problems and in priority.

10. To determine goals of PT treatment which are realistic to the probable discharge situation, the student:

0 is not observed/is not required to perform.
1 needs frequent correction to determine short- and long-term goals.
2 needs minimal correction to determine short-term goals but still needs frequent correction to determine long-term goals.
3 determines short-term goals but needs minimal correction to determine long-term goals.
4 determines both short- and long-term goals.

11. When selecting PT treatment procedures appropriate to the patient's physical and psychological goals and needs, the student:

0 is not observed/is not required to perform.
1 needs frequent correction to select appropriate treatment procedures.
2 needs minimal correction to select appropriate treatment procedures.
3 selects appropriate treatment procedures but needs minimal correction to select suitable sequence/frequency/duration of those procedures.
4 selects appropriate treatment procedures including sequence, frequency and duration.

12. To justify choice of treatment procedures, the student:

0 is not observed/is not required to perform.
1 does not demonstrate sound knowledge of physiological effects of treatment procedures when questioned.
2 demonstrates sound knowledge of physiological effects only when questioned, ie. has difficulty applying knowledge to a rationale for treatment.
3 utilizes sound knowledge of physiological effects as a sound rationale for treatment.
4 suggests and defends variations or changes to the treatment program which will be effective and interesting for the patient.

Comments:

	R	F	M	T	W	R	F	M	T	W	R	F	M	T	F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20
Circle	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	ts	

C. Implementation of the Treatment Program

13. When implementing the PT treatment program, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to perform selected treatment procedures safely.
2 performs selected treatment procedures safely but needs minimal assistance/correction to ensure effectiveness.
3 performs selected treatment procedures safely and effectively but is awkward/makes minor error(s).
4 performs selected treatment procedures in a correct, safe, effective and proficient manner.

14. To observe the patient's clinical signs and responses to treatment with respect to the patient's disability/age/tolerance, the student

0 Is not observed/is not required to perform.
1 needs frequent correction to observe patient's signs and responses.
2 needs reminding to observe patient's signs and responses.
3 observes the patient's signs and responses but does not consistently interpret them correctly.
4 always observes patient's signs and responses and interprets them correctly.

15. Following observations and ongoing evaluations, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to modify and/or progress treatment procedures appropriately.
2 needs reminding to modify and/or progress treatment procedures appropriately.
3 modifies and/or progresses treatment procedures appropriately but does not consistently obtain the patient's optimal performance.
4 modifies and/or progresses treatment procedures appropriately and consistently obtains the patient's optimal performance.

16. To prepare and tidy equipment and treatment area before and after each session, the student:

0 Is not observed/is not required to perform.
1 does not accept this responsibility unless told to do so.
2 accepts this responsibility partially, when no reminders given.
3 accepts this responsibility hesitantly/slowly.
4 accepts this responsibility completely.

17. To ensure safety when moving the patient and when applying equipment, modalities and treatment procedures, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to adhere to safety precautions.
2 needs reminding to adhere to safety precautions.
3 diligently adheres to safety precautions.
4 diligently ensures the patient's comfort as well as safety.

18. To ensure dignity of the patient, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to ensure dignity when positioning/moving/draping the patient.
2 needs reminding to ensure dignity when positioning/moving/draping the patient.
3 ensures dignity when positioning/moving/draping the patient.
4 demonstrates a respect for the patient at all times.

19. To prepare for discharge from PT services, the student's treatment:

0 Is not observed/is not required to perform.
1 does not include preparation for discharge, unless told to do so.
2 inadequately prepares the patient/family for discharge, when no assistance/correction is given.
3 organizes suitable post-discharge plans and instructs the patient/family how to proceed with them.
4 adequately prepares the patient/family for discharge in collaboration with other disciplines and services, as necessary.

Comments:

	R	F	M	T	W	R	F	M	T	W	R	F	M	T	F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20
Circle	In	In	In	In	In	In	In	In	In	In	In	In	In	In	

D. Communication with the Patient/Family

20. To educate the patient/family regarding the patient's status, the patient's PT treatment and its importance and progressions, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to explain these aspects to patient/family.
2 needs reminding to explain these aspects to patient/family.
3 explains these aspects at a level appropriate to age, education and comprehension of the patient/family to ensure their understanding.
4 gives explanation in a dynamic manner to inspire confidence and motivation of the patient/family.

21. To instruct the patient/family during treatment, the student:

0 Is not observed/is not required to perform.
1 gives instructions/demonstrations that are too short/confusing to the patient.
2 gives instructions/demonstrations that are clear but too lengthy.
3 gives clear and concise instructions/demonstrations, but they lack enthusiasm.
4 gives clear and concise instructions in a dynamic manner to gain the patient's/family's best efforts and cooperation.

22. To encourage and motivate the patient/family, the student:

0 Is not observed/is not required to perform.
1 does not correct or praise the patient/family, unless told to do so.
2 needs reminding to correct and praise the patient/family when it is indicated.
3 corrects the patient/family but needs reminding to use praise when it is indicated.
4 corrects and praises the patient/family appropriately to ascertain optimal performance.

23. To develop an interpersonal relationship with the patient/family, the student:

0 Is not observed/is not required to perform.
1 does not exhibit a genuine interest or a warm concern toward the patient/family.
2 needs reminding to listen to patient/family and to adapt approach/treatment in view of feelings/attitudes expressed by them.
3 listens to their feelings/attitudes but needs reminding to adapt approach/treatment accordingly, eg. needs reminding to limit behavior which may hamper treatment.
4 listens to their feelings/attitudes and adapts approach/treatment in order to establish a rapport which is motivating and reassuring to the patient/family.

24. To assist the patient/family assume responsibility for implementing treatment, the student:

0 Is not observed/is not required to perform.
1 does not teach the patient/family ward or home therapy.
2 needs reminding to teach patient/family ward or home therapy.
3 teaches patient/family ward or home therapy.
4 includes the patient/family in determination of goals and/or in monitoring their own therapy, as appropriate.

Comments:

E. Communication with other health care personnel

	R	F	M	T	W	R	F	M	T	W	R	F	M	T	F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20
Circle	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	

25. To manage treatment schedule, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to organize treatment schedule and to coordinate times with the patient/PT staff/other disciplines.
2 needs reminding to organize treatment schedule and to coordinate times with the patient/PT staff/other disciplines.
3 organizes treatment schedule and coordinates times with the patient/PT staff/other disciplines but needs reminding to keep self on schedule.
4 schedules self the appropriate amount of time for preparation, completion and documentation of treatment in addition to organizing treatment times.

26. To establish professional relations as a member of the health care team, the student:

0 Is not observed/is not required to perform.
1 is not aware of function of team members and does not communicate with tort.
2 is aware of the function of team members but does not communicate with tort.
3 is aware of the functions of team members and communicates with tort, but needs reminding to collaborate with team members.
4 communicates with perceptiveness and tact, and collaborates fully with team to provide comprehensive care.

27. To orally communicate results of evaluation and treatment to supervising therapist/physician/team, the student:

0 Is not observed/is not required to perform.
1 does not show initiative to provide patient information.
2 shows initiative to provide patient information, but reports incomplete/inappropriate information.
3 reports all appropriate information, but manner is inappropriate for intended audience.
4 presents oral reports in content and manner appropriate for intended audience.

28. To assist other health care personnel implement aspects of the patient's PT treatment, the student:

0 Is not observed/is not required to perform.
1 needs frequent assistance/correction to teach methods of care to others.
2 needs reminding to teach methods of care to others.
3 teaches methods of care to others but at an unrealistic/inappropriate level.
4 teaches methods of care to others at a realistic/appropriate level.

Comments:

F. Documentation

	R	F	M	T	W	R	F	M	T	W	R	F	M	T	F
Day	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20
Circle	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	tn	

29. To record the initial evaluation and treatment plan, the student:

0 Is not observed/is not required to perform.
1 needs frequent correction to document accurate and objective evaluation data.
2 documents evaluation data accurately/objectively but needs minimal correction to ensure relevancy/completeness.
3 documents accurate, objective, relevant and complete evaluation data but needs reminding to ensure completion according to the format and time limits of the facility.
4 documents accurate, objective, relevant and complete evaluation data according to the format and time limits of the facility.

30. To record progress or effectiveness of treatment, the student:

0 Is not observed/is not required to perform.
1 needs frequent correction to document accurate and objective treatment data.
2 documents treatment data accurately/objectively but needs minimal correction to ensure relevancy/completeness.
3 documents accurate, objective, relevant and complete treatment data but needs reminding to ensure completion according to the format and time limits of the facility.
4 documents accurate, objective, relevant and complete treatment data in the correct format and at appropriate times.

Comments:

Section II: Rating of Professional Competencies

Consider only the final week of the placement to rate the frequency with which the professional characteristics listed below are demonstrated by the student in your presence.

A student is competent if these characteristics, depicting professional behavior and growth, are USUALLY performed. It is anticipated that most students will fall in the USUALLY category; the remaining students will deviate toward either extreme of the scale:

Key: ALWAYS- no lapses occurred
USUALLY- 1 lapse occurred
INCONSISTENTLY- more than one lapse occurred
OCCASIONALLY- too many lapses occurred

Please place a check-mark in the column which best describes the frequency of the professional characteristics listed below as displayed by the student in the final week of the placement.

G. Professional Behavior and Growth	NOT OBSERVED	OCCASIONALLY	INCONSISTANT	USUALLY	ALWAYS
31. respects confidentiality of patient information					
32. is reliable regarding punctuality and duties					
33. presents a professional appearance					
34. displays a genuine interest in learning the specialty of this placement					
35. assumes PT functions and responsibilities appropriate to setting (prevention, maintenance, consultation, etc.)					
36. asks appropriate questions or seeks assistance when in doubt					
37. uses suggestions from supervising therapist and modified behavior accordingly					
38. identifies own strengths and weaknesses					
39. uses self-assessment to improve performance					
40. seeks out available resources/references/research to enhance knowledge and skills					

Comments:

APPENDIX J

Questionnaire of the Reactions of Students and Preceptors to the Evaluation of Clinical Competence

QUESTIONNAIRE

Evaluation of Clinical Competence Form: Fourth Year PT Students

Please circle the response that you feel is the most appropriate.

1. The number of subcompetencies evaluated in this form is:

   too many about right too few

2. The content of the subcompetencies evaluated in this form is:

   relevant mostly relevant irrelevant

3. Four standards of performance for each subcompetency are:

   too many about right too few

4. The qualitative differences between each of the four standards of performance are:

   too large about right too small

5. The description of the standards of performance by which to judge a student's performance is:

   highly specific specific enough not specific enough

6. The importance of observation and evaluation in the following major competency areas is:

   Key: very important, important, not important

patient evaluation	v.imp	imp	not imp
program planning	v.imp	imp	not imp
implementation of treatment	v.imp	imp	not imp
communication with patient/family	v.imp	imp	not imp
communication with other health personnel	v.imp	imp	not imp
documentation	v.imp	imp	not imp

7. The ease of observing/being observed on subcompetencies under the following major competency areas is:

   Key: always easy, usually easy, seldom easy

patient evaluation	always	usually	seldom
program planning	always	usually	seldom
implementation of treatment	always	usually	seldom
communication with patient/family	always	usually	seldom
communication with other health personnel	always	usually	seldom
documentation	always	usually	seldom

8. The ability of this evaluation form to evaluate a student objectively is:

   good adequate poor

9. The ability of this form to gain a good picture of a student's actual performance is:

   good adequate poor

10. Please circle the response which best describes your reaction to the following aspects of this evaluation form:

    Key: positive, neutral, negative

observing/being observed daily	positive	neutral	negative
rating/being rated on the form daily	positive	neutral	negative
rating/being rated ONLY on performance that has been observed	positive	neutral	negative
determining a final rating by consideration of performance throughout the placement	positive	neutral	negative
format (lay-out) of the form	positive	neutral	negative
specificity of the standards of performance	positive	neutral	negative
forced-choice design for choicing a standard of performance	positive	neutral	negative
ease of completing the form	positive	neutral	negative
administration instructions (for research phase)	positive	neutral	negative
no provision for subjective interpretation of student's performance	positive	neutral	negative
effect on the level of therapist-student interaction	positive	neutral	negative
effect on student's level of anxiety	positive	neutral	negative
effect on student's level of clinical performance	positive	neutral	negative
effect on the therapist's skill in evaluating students	positive	neutral	negative

    others (COMMENT):